DISSERTATION ON

FACTORS INFLUENCING URINARY INCONTINENCE IN ELDERLY AND ITS IMPACT ON QUALITY OF LIFE

Submitted In partial fulfilment of

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CERTIFICATE

This is to certify that the dissertation titled **"FACTORS INFLUENCING URINARY INCONTINENCE IN ELDERLY AND ITS IMPACT ON QUALITY OF LIFE "** is the bonafide work done by **Dr.M.Vidyalakshmi**, Post Graduate Student, Department of Geriatric Medicine, Madras Medical College, Chennai – 600003, in partial fulfilment of the University rules and regulations for the award of **MD DEGREE** in **GERIATRIC MEDICINE BRANCH – XVI**, under our guidance and supervision, for the examination to be held on **October 2017**.

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DECLARATION

I solemnly declare that this dissertation titled **"FACTORS INFLUENCING URINARY INCONTINENCE IN ELDERLY AND ITS IMPACT ON QUALITY OF LIFE"** was done by me at Madras Medical College, Chennai – 600003, under the guidance and supervision of the **Professor Dr.S.SIVAKUMAR, M.D., D.T.R.D.,** to be submitted to the The Tamilnadu Dr.M.G.R. Medical University, towards the partial fulfilment of requirements for the award of **MD DEGREE IN GERIATRIC MEDICINE BRANCH – XVI**.

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INTRODUCTION

Urinary incontinence can be defined as any involuntary leakage of urine.

Though it a common problem among the elderly, some assume that it is a normal consequence of ageing while others either embarrassed by their incontinence or out of fear for invasive testing avoid further evaluation and treatment.

Neurological diseases responsible for incontinence include stroke, Alzheimer's disease and Parkinson's disease. Spinal cord damage due to multiple sclerosis, trauma or tumor can cause bladder dysfunction. Damage to afferent parasympathetic fibres in diabetic autonomic neuropathy causes incontinence.

Local factors may be due to pressure on the bladder due to faecal impaction/ prostate enlargement.

Stress incontinence is due to weakness of pelvic floor muscles especially in multiparous/ post menopausal women. Atrophic vaginitis, urethritis due to lack of estrogen cause urge incontinence.

Infections, endocrine disorders, psychological factors, diuretics, increased intra thoracic and intra abdominal pressure also play a role in causing incontinence.

Urinary incontinence results in various medical, social and economic consequences resulting in skin irritation, pressure sores, sense of guilt, social isolation, depression and increased expenditure for treatment thus significantly affecting the quality of life.

Hence we take up this study to evaluate the influence of various factors on urinary incontinence and its impact on quality of life.

Aim

AIM

- To evaluate the factors influencing urinary incontinence
- To evaluate the impact of urinary incontinence on the quality of life

Review of Literature

REVIEW OF LITERATURE

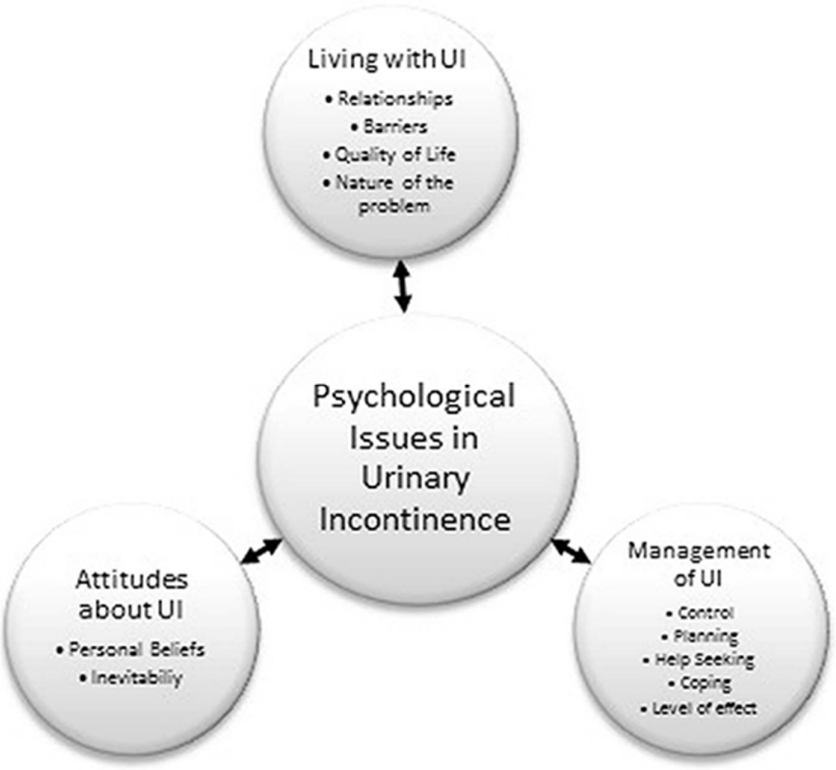
DEFINITION AND EPIDEMIOLOGY :

Urinary incontinence can be defined as any involuntary leakage of urine. Incontinence varies in severity from occasional episodes of dribbling small quantities of urine to continuous urine leakage and concomitant fecal incontinence. It is a common and troublesome condition in elderly often hidden by the patient because of embarrasment.

The prevalence of incontinence increases with increasing age as well as with increasing frailty. It is 1.3 to 2.0 times greater in older women than in older men. In community-dwelling older women, the prevalence of urinary incontinence is approximately 35% and among older men, it is approximately 22%. The prevalence of daily urinary incontinence in older community-dwelling persons is approximately 12% for women and 5% for men. The prevalence reaches 60% among hospital inpatients.

COMPLICATIONS:

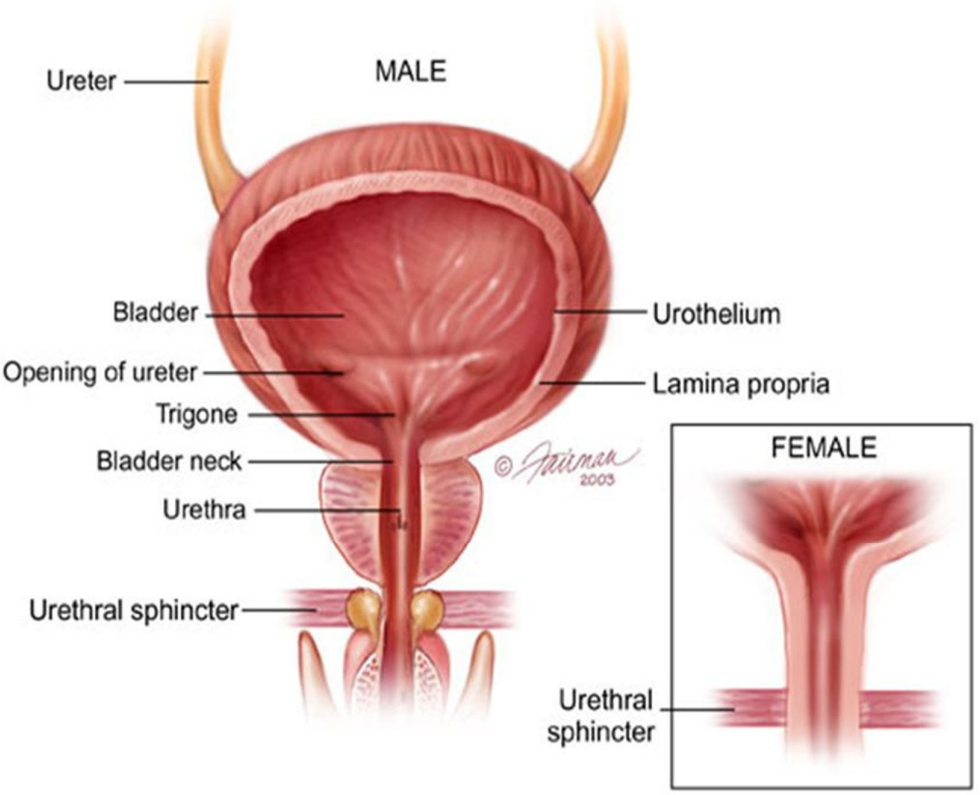
- Embarrassment leads to fear of going out, which in turn leads to social isolation.
- Depression.
- Embarrassment may lead to avoidance of sex.
- Increased financial burden and workload for the caregivers
- Increased risk of hospitalisation
- Skin irritation may lead to pressure sores



Thus incontinence affects physical health, psychological well being, social status and the costs of healthcare. Urinary incontinence can be cured or improved, especially in those who have adequate mobility and cognition. Even when not curable, incontinence can always be managed to allow for more patient comfort, make life easier for caregivers, and minimize costs of health care for the condition. As many elderly patients are embarrassed to discuss their incontinence and are unaware that treatment is available, it is essential for specific questions about incontinence to be included in comprehensive geriatric assessments for incontinence to be noted as a problem .

ANATOMY OF LOWER URINARY TRACT:

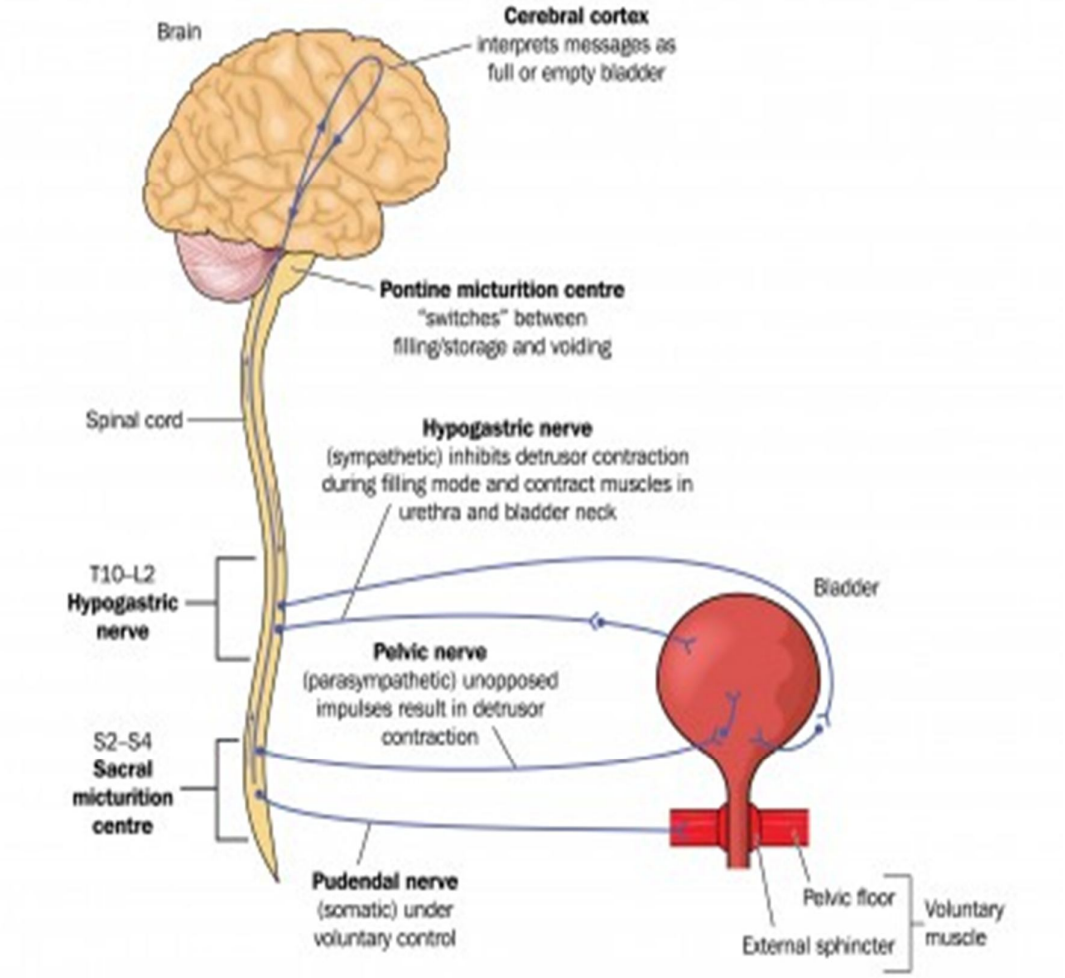
The smooth muscle fibers of the detrusor muscle of the bladder are randomly arranged over the dome of the bladder and funnel at the bladder neck. They continue into the urethra as longitudinal fibers forming a tube. In males, these fibers are inserted into the verumontanum. In females, they terminate in the distal urethra. Contraction of the detrusor results in increase in bladder pressure and shortening of the urethra. Contraction of the trigonal muscles, the triangular base plate with its apex at the neck of the bladder and base running between both ureters results in funneling of the bladder neck. There are a few fibers that are inserted into the external surface of the trigone distally. These fibres pull the distal margins of the trigone away and open the bladder neck.



The internal urethral sphincter is seen only in males. It forms a circular collar and continues with the prostatic smooth muscle. This sphincter is not needed to maintain continence but it contracts during ejaculation and prevents the retrograde flow of semen into the bladder. Thus, even though the internal sphincter is cut during transurethral resection of the prostate, continence is maintained.

The external urethral sphincter is the important requisite for maintaining continence in both men and women. Along with the smooth muscle and epithelium of the urethra, especially in women. The urethra consists of an inner longitudinal smooth muscle and an outer circular smooth muscle controlled by the adrenergic and cholinergic receptors and under modulation of NO and CO.

Neurological control of the bladder and urethra depends on a supraspinal neuronal network. It allows voluntary postponement of voiding and the ability to hold urine and empty it at a socially convenient time. Thus bladder function involves both storage of urine and voiding at a socially appropriate time. **The main levels of control over the bladder are cortical (inhibitory), hypothalamic (excitatory), midbrain (inhibitory) and pontine (excitatory).**



External sphincter activity is greatly supported by the adrenergic smooth muscle of the urethra. The sympathetic innervation for the lower urinary tract is from the postganglionic nerves running in the hypogastric plexus, the pelvic and the pudendal nerves. This sympathetic innervation inhibits the detrusor, causing relaxation and stimulates the urethral smooth muscle and the sphincters. The inhibitory noradrenergic receptors on detrusor cells belong to β3 subtype.

RECEPTORS AND NEUROTRANSMITTERS:

Among the adrenergic receptors, alpha and beta receptors are widely ditributed in the bladder. Beta-receptors predominate in the bladder body and alpha-receptors in the bladder base and bladder neck region. Urine storage is by relaxation caused by beta stimulation and tonic contraction in the area enriched by alpha-receptors. Alpha-receptors are also present in the prostatic urethra and stroma. When these receptors are stimulated, it causes contraction and thus obstruction of the bladder neck. Muscarinic receptors are the other group of receptors involved in bladder function. These receptors, especially the M2 and M3 subtypes cause bladder contraction Sympathetic control, mediated by α1A α- adrenoceptors is more important. The pelvic floor muscles and the external urethral sphincter are supplied by somatic efferents taking their origin from the anterior horns of the sacral segments S2–S4. The motor neurons are grouped in a region- The Onuf's nucleus. It differs from other somatic motor nuclei, by having histochemical appearances similar to sacral parasympathetic nuclei as well as evidence of adrenergic innervation. The axons, taking origin from the Onuf's nucleus pass to the periphery through the pudendal and the pelvic nerves.

Motor activation of the detrusor muscles is by the stimulation of muscarinic receptors by acetylcholine. This activates the second messenger system causing release of Ca2+ ions from the sarcoplasmic reticulum. An inward flow of Ca ions through L-type Ca2+ channels takes place. The rise in intracellular Ca2+ ion concentration activates actin and myosin, and causes muscle contraction. The detrusor cell can depolarize with an inward current consisting of Ca2+ ions passing through L-type channels in optimum strength so as to cause depolarization. The normal function of the L-type Ca2+ channel is the regulation of the filling of intracellular stores in the resting

state. Cholinergic activation occurs independently of depolarization. Moreover cholinergic activation has limited influence and hence the calcium channel blockers have low efficacy in the treatment of detrusor overactivity.

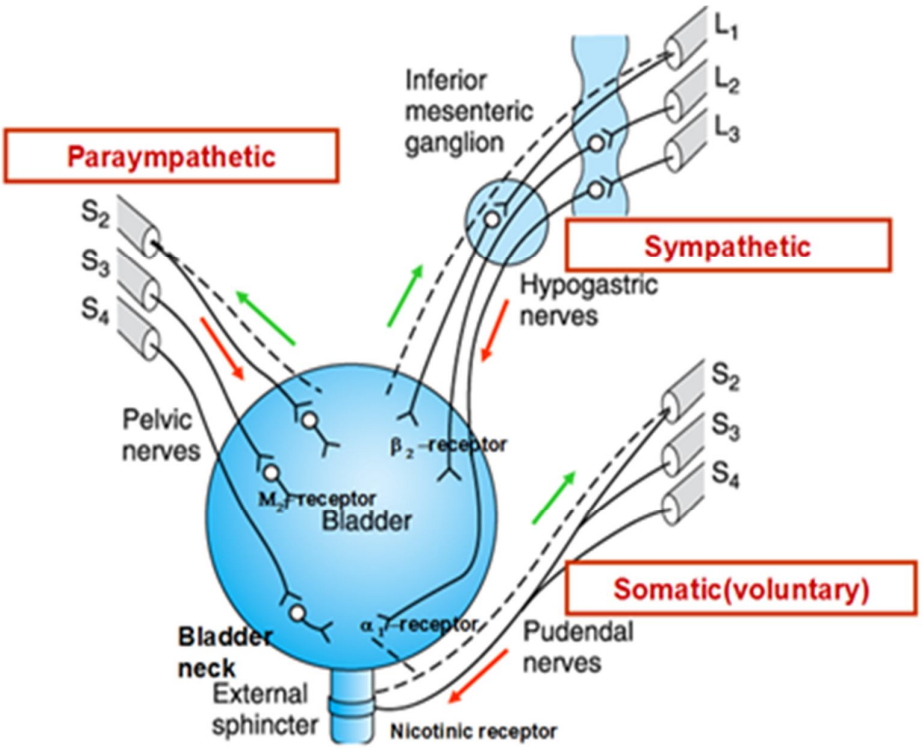
Studies regarding muscarinic receptors in the bladder have shown that the 85% are M2 receptors and 15% M3. The contractile activity is mostly attributed to the M3 receptor. The M2 receptor has an apparent role in the appreciation and modulation of sensory inputs in both the detrusor and the urothelium. Some muscarinic antagonists are selective for the bladder, but this specificity is not associated with either M2 selectivity or lack of M3 selectivity.

Apart from cholinergic and adrenergic neurotransmitters, there are Nonadrenergic noncholinergic (NANC) neurotransmitters which are neuropeptides that modulate the actions of the regular transmitters and act as transmitters themselves.

Neuropeptide-Y (NPY) and vasoactive intestinal polypeptides (VIP) are important neuromodulators, released at the neuromuscular junctions. They facilitate the release and uptake of acetylcholine and noradrenaline.

Adenosine triphosphate (ATP) is an important neurotransmitter. Released along with acetylcholine, it causes depolarization of the detrusor. ATP is not much important in a continent bladder. But in diseased states the activating mechanisms of the detrusor change and NANC transmitters have a greater influence on the bladder, the ATP being broken down less effectively in the overactive detrusor .

Recently the concept of spontaneous detrusor activity and the role of the interstitial cells in its regulation has been studied extensively. These cells lie in the suburothelial space or within the detrusor and, throughout the lower urinary tract. These cells act as pacemaker cells.



PHYSIOLOGY OF MICTURITION:

Normal micturition is a dynamic process, requiring the coordination of several processes. Normally, as the bladder fills, bladder pressure remains low (≤15 cm H_2O). First urge to void generally occurs at a bladder volume of 150 to 350 mL. Normal bladder capacity is 300 to 600 mL. When normal urination starts, the detrusor muscle contracts and detrusor pressure increases until it exceeds urethral sphincter resistance (which lowers immediately before bladder contraction) and urine flow occurs.

If during bladder filling, total bladder pressure exceeds outlet resistance, urinary leakage occurs. Transmitted intraabdominal pressure caused by coughing , sneezing, laughing or lifting weight may cause leakage in people with low outlet resistance pressure or urethral sphincter weakness. In other occasions, the bladder can contract involuntarily and cause urinary leakage.

Urination is governed by a reflex centered in the sacral micturition center. During normal filling of the bladder, afferent pathways (via somatic and autonomic nerves) carry information on bladder volume to the spinal cord. Motor output is adjusted accordingly. Sympathetic tone closes the neck of the bladder and inhibits parasympathetic tone thus causing relaxation of the dome of the bladder; somatic innervation maintains tone in the pelvic floor musculature (including striated muscle around the urethra). Voluntary contraction of the pelvic floor muscle leads to inhibition of parasympathetic tone. For bladder emptying, sympathetic and somatic tones diminish, and parasympathetic, cholinergic impulses cause the bladder to contract.

PATHOPHYSIOLOGY:

Anatomic and physiologic components of the lower urinary tract, as well as functional, psychological, and environmental factors, contribute to the pathophysiology of incontinence in elderly.

Normal micturition is a complex process; Proper bladder filling and emptying are influenced by higher centers in the brainstem, cerebral cortex, and cerebellum. The

brainstem facilitates urination and the cerebral cortex exerts a predominantly inhibitory influence. Additionally, the loss of the central cortical inhibitory influences over the sacral micturition center from diseases such as stroke can produce incontinence in older patients. Even in the absence of specific, overt neurological lesions, poor bladder control has been shown to be associated with inadequate activation of the orbito-frontal cortex. Disorders of the brainstem and supra sacral spinal cord can interfere with the coordination of bladder contraction and urethral relaxation. Interruptions of the sacral innervation can cause impaired bladder contraction and problems with continence. Since higher cerebral centers tend to inhibit the pontine micturition center, lesions above this area associated with detrusor overactivity of neurogenic origin. Frontal lobe lesions are associated with frequency, urgency, and urgency incontinence with a loss of warning of impending micturition.

Any spinal cord injury that disrupts the normal connection between the sacral spinal cord and the supra spinal pathways controlling micturition will cause bladder dysfunction. Lesions of the spinal cord below the pons, but rostral to the sacral nuclei, result in bladder areflexia initially, lasting days to weeks before detrusor overactivity develops. However, if a spinal lesion involves complete destruction of the sacral nuclei, bladder areflexia will be permanent.

REQUISITE FOR CONTINENCE:

1. Effective lower urinary tract function
2. Storage : Accommodation by bladder of increasing volumes of urine under low pressure Closed bladder outlet, Appropriate sensation of bladder fullness, Absence of involuntary bladder contractions
3. Emptying : Bladder capable of contraction, Lack of anatomic obstruction to urine flow, Coordinated lowering of outlet resistance with bladder contractions
4. Adequate mobility and dexterity to use toilet
5. Adequate cognitive function to recognize toileting needs
6. Motivation to be continent
7. Absence of environmental and iatrogenic barriers

CHARACTERISTICS OF NORMAL URINE:

Quantity is usually 1 to 2 litres over 24 hours.

- Normal urine is Straw or amber coloured;
- Specific gravity normally ranges from 1.010–1.025; specific gravity is a measure of dissolved matter in urine and hence a lower value indicates a dilute urine.
- pH Averages to 6; range is 4.6–8.0;
- Composition of urine is 95% water; 5% salts and other waste products
- Nitrogenous wastes are, Urea produced from amino acid metabolism
    - Creatinine formed from muscle metabolism
    - Uric acid produced from nucleic acid metabolism

AGING AND URINARY SYSTEM:

With age, the number of nephrons in the kidney decreases, so as to reach half the original number by the age of 70 to 80, and the kidneys lose some of their concentrating ability. The glomerular filtration rate decreases due to arteriosclerosis and diminished renal blood flow. Inspite of all these changes, excretion of nitrogenous wastes usually remains adequate.

The bladder decreases in size, and the detrusor muscle tone decreases. These changes cause increase in frequency of urination. Urinary incontinence (the inability to control voiding) is *not* an inevitable consequence of aging. It can be prevented or minimized. But increase in post voidal residual urine causes stasis of urine thereby increasing the rate of urinary tract infection in elderly.

Receptors and ageing:

Ageing causes change in the type, sensitivity and number of receptors. With increasing age, alpha adrenoceptor responsiveness decreases or remains the same. In addition, alpha-receptors in the ageing bladder show a shift from the alpha-1a subtype to alpha-1d predominance. Alpha-blockers have an effect in the bladder by causing relief of lower urinary tract symptoms. Hence alpha blockers have a short-term as well as long-term use in elderly men with prostate disease.

FACTORS ASSOCIATED WITH INCONTINENCE:

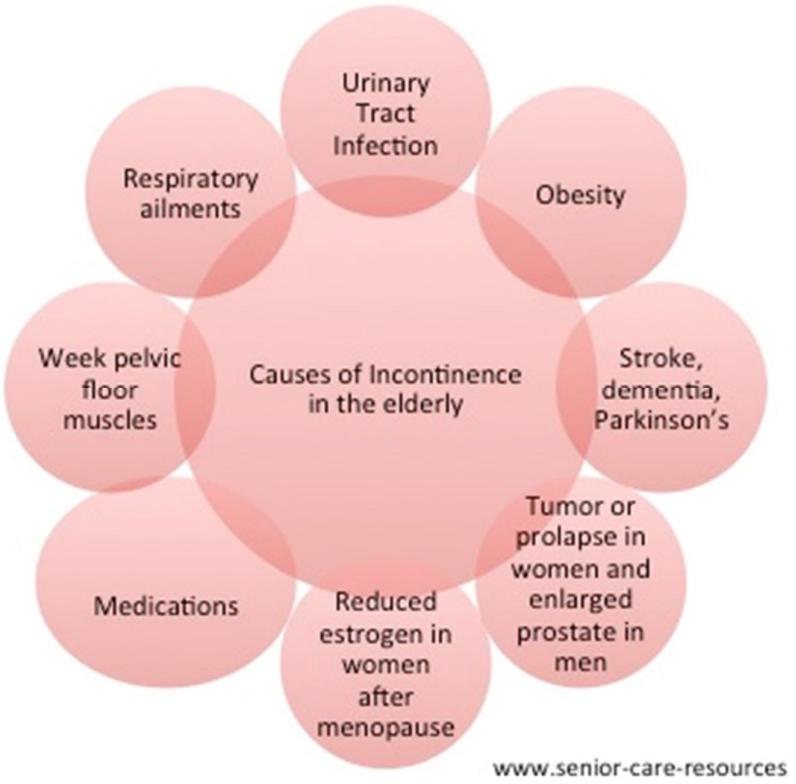
Incontinence has an association with the following factors;

- Falls
- Depressive symptoms
- Pressure ulcers
- Chronic Bowel problems
- Skin infection
- Isolation
- Impairment in quality of life
- Increased institutionalisation

Incontinence is also a Consequence of the Following:

- Lower urinary infection and disease
- Impaired motility due to Musculoskeletal disease
- All kinds of arthritis
- Vascular disease mainly vascular.
- Stroke
- Parkinson's disease
- Dementias
- Diabetes mellitus
- Venous insufficiency
- Chronic lung diseases
- Congestive heart failure

- Neurologic disorders, for example: multiple sclerosis, spinal cord injury and motor neuron disease.
- Environmental factors



Being bed bound and reliant on assistance is a challenging feature in continence. Though nurses attend to toileting, there is a delay. In males with reduced mobility, bottle use for toileting is impaired by small penis and absence of dexterity. In hospitals, the toilet may be farther than at home and also the acute illness makes mobilisation difficult. Location of toilet at inaccessible site elderly makes it difficult for them.

Various factors interplay in causation of urinary incontinence. There may be neurological, urological, gynaecological, psychological, physical and functional factors. Proper treatment requires determination of correct cause.

In general urinary incontinence increases with age. In females urge and mixed incontinence increase with age, while stress incontinence does not.

Aging changes in lower urinary tract leads to development of urinary incontinence.

Residual volume of bladder is increased.

Capacity of bladder to hold urine is reduced maily because of involuntary bladder contraction or detrusor overactiviy. Prevalence of detrusor over activity is 50 to 70% in incontinent patients while it is5 to 10 % in incontinent male and female. This implies that detrusor over activity is not always associated with incontinence. Urinary incontinence occurs in patients with detrusor over activity if mobility of patient is also impaired.

Increasing age accounts for reduction in bladder outlet resistance and urethral sphincter resistance. Laxity of pelvic structures in multiparous women (vaginal deliveries or Caesarean section) may result in a greater risk of future incontinence. In addition, in older populations, poor vaginal support is also associated with obstructive urinary symptoms along with urinary leakage and urgency. Obesity, deconditioned muscles, and hysterectomy predispose women to future incontinence. Racial or ethnic characteristics are also important; white women are more likely to have stress urinary incontinence than the African-American women.

Older men with prostatic hypertrophy are more likely to have decreased urine flow rates and detrusor motor instability. Increasing age is often associated with higher rates of nocturia, which is due to higher urine production at night. Many older individuals have impaired bladder contractility, often in combination with detrusor hyperactivity (a condition termed *detrusor hyperactivity with impaired contractility,* or DHIC). It is evident as widespread muscle degeneration on detrusor muscle biopsy.

ACUTE AND REVERSIBLE CAUSE:

Acute incontinence refers to those conditions in which the incontinence has sudden onset, related to an acute illness or an iatrogenic problem, and subsides if the illness or medication problem has been cleared.

Persistent incontinence refers to urinary leakage that is not related to an acute illness and persists for a long time. Several of the reversible factors discussed below are associated with persistent forms of incontinence.

These potentially reversible causes include restricted mobility, lack of motivation leading to unwillingness to reach the toilet, conditions that affect the lower urinary tract, conditions causing or contributing to polyuria, and iatrogenic factors. Because of urinary frequency and urgency, many older persons, especially those having restricted mobility, carefully arrange their schedules (and may even limit social activities) so as to be close to a toilet. Thus, an acute illness can precipitate incontinence by affecting this balance.

Hospitalization, with its attendant environmental barriers (such as bed rails), and the delirium and immobility that often accompany acute illnesses in older patients often contribute to acute incontinence. Acute incontinence in these situations is likely to resolve with resolution of the underlying acute illness. In a substantial proportion of patients, incontinence may persist for several weeks after hospitalization and should be further evaluated.

Fecal impaction is a common problem in both acutely and chronically ill elderly patients. Impaction may cause mechanical bladder outlet obstruction thus preventing adequate bladder emptying. In addition, reflex bladder contractions are induced by rectal distension. Relief of a fecal impaction causes resolution of both urinary and faecal incontinence. Urinary incontinence with a high post void residual volume should be considered in any patient who develops urinary incontinence with a sudden onset. Immobility; anticholinergic drugs, narcotics, calcium channel blockers, beta adrenergic medications, fecal impaction can all precipitate incontinence with a high post void residual volume in an older patient.

In addition, urinary retention may be an manifestation of an underlying process causing spinal cord compression or occur after a stroke.

A wide variety of medications play a role in the development of incontinence in elderly patients Whether the incontinence is acute or persistent, the potential role of these medications in causing or contributing to a patient's incontinence should be considered. If possible, stopping the medication, switching to an alternative, or modifying the dosage schedule can be beneficial and may be the only necessary

treatment for incontinence. In addition, drinking caffeinated beverages can increase urinary frequency and urgency, thus precipitating incontinence.

Effects of Medications on Continence:

- α-adrenergic agonists act by increasing smooth muscle tone in urethra and prostatic capsule and causes obstruction, urinary retention, and related symptoms
- α-adrenergic antagonists act by decreasing smooth muscle tone in the urethra and causes stress urinary incontinence
- Angiotensin-converting enzyme (ACE) inhibitors act by causing cough that exacerbates incontinence
- Agents with antimuscarinic properties act by causing urinary retention and constipation. They also cause cognitive impairment and reduce the toileting ability.
- Calcium channel blockers act by causing urinary retention and constipation. They can cause dependent edema, contributing to nocturnal polyuria.
- Cholinesterase inhibitors (cognitive enhancers) act by increasing bladder contractility and precipitating urge incontinence
- Diuretics act by causing diuresis and leading to incontinence.
- Lithium acts by causing Polyuria due to diabetes insipidus-like state.
- Opioid analgesics act by causing urinary retention, constipation, confusion, and immobility.

- Psychotropic drugs, Sedatives, Hypnotics, Antipsychotics, Histamine1 receptor antagonists act by causing confusion and impaired mobility Few agents have anticholinergic effects also.
- Selective serotonin re-uptake inhibitors act by increasing cholinergic transmission leading to urge urinary incontinence.
- Other drugs causing incontinence are:

  Gabapentin, Glitazones, Non steroidal anti inflammatory agents act by causing polyuria and nocturia.

Inflammation of the lower urinary tract may precipitate or ex-acerbate incontinence. Atrophic vaginitis and urethritis are common among older women, and can cause dysuria, urgency, and frequency contributing to incontinence. Physical signs including patchy erythema, increased vascularity of the labia minora and vaginal epithelium, petechiae and friability, and urethral erythema often with an inflamed caruncle (dark or bright red epithelium usually at the inferior aspect of the urethra). Topical estrogen therapy is often helpful in older women with these conditions. Acute urinary tract infection also can precipitate or exacerbate incontinence. However, urine loss in patients with *chronic* incontinence, especially frail hospital inpatients, with asymptomatic bacteriuria (with or without pyuria) does not improve when the bacteriuria is eradicated. These patients, hence, should not be treated with unnecessary antibiotics.

Diuretics (especially rapid-acting loop diuretics) and conditions that cause polyuria, including hyperglycemia and hypercalcemia, cause acute incontinence. Patients with volume overload states, like congestive heart failure and lower extremity

venous insufficiency, may have polyuria at night, which can contribute to nocturia and nocturnal incontinence.

PERSISTENT INCONTINENCE:

Three types of incontinence—stress, urge, and overflow—result from abnormalities in lower genitourinary tract function:

1. Failure to store urine, caused by a hyperactive bladder or the one with a poor compliance or by diminished outflow resistance; and/or
2. Failure to properly empty the bladder, caused by a poorly contractile bladder or increased outflow resistance.

Stress incontinence is common in elderly women, especially if the patient is ambulant. The symptoms of stress incontinence are very specific: leakage occurs with increases in intra-abdominal pressure caused by coughing, sneezing, laughing, exercising or lifting a weight.Stress incontinence if infrequent involving very small amounts of urine, it may need no specific treatment ; if so severe and/or bothersome that it makes the person housebound, it needs treatment. In women, it is commonly associated with weakened supporting tissues, resulting in hypermobility of the bladder outlet and urethra caused by lack of oestrogen, obesity, previous vaginal deliveries, and/or surgery. Some women, especially those with previous lower urinary tract surgery, have intrinsic urethral weakness with failure of the urethra to coapt and prevent urine leakage. These patients have severe incontinence. Occasionally some patients have constant wetting. Stress incontinence is quite unusual in men, and it mainly occurs following transurethral surgery for benign conditions such as benign hypertrophy of prostate or after surgical or radiation therapy for lower urinary tract malignancy when the anatomic sphincters are damaged.

Urge incontinence can be caused by a various lower genitourinary and neurologic disorders. It is characterized by a sudden strong desire to void, usually accompanied by a fear of leakage, and followed by urine loss. The amount of urine lost is variable and mainly dependent on sphincter function and the ability of the patient to abort a bladder contraction. Urge incontinence along with urinary urgency, day-time urinary frequency, and nocturia, has been called "*wet* overactive bladder". Urge incontinence is mostly associated with involuntary bladder contractions. Few patients have a poorly compliant bladder without involuntary contractions (e.g., interstitial cystitis or following irradiation). A subgroup of incontinent patients with detrusor hyperactivity also has impaired bladder contractility, emptying less than 33% of their bladder volume with involuntary contractions on urodynamic testing. Frequency, urgency, urgency incontinence, nocturia, and enuresis are common symptoms associated with detrusor overactivity (DO) and have been found to be associated with the involuntary detrusor contractions of DO, and tend to reduce with resolution of the overactivity. Frequency and urgency are more noticeable when out and about, when putting the key in the door on returning home, in cold weather, in anxiety-provoking situations, and are subject to diurnal and seasonal variation. Concurrent illness, particularly urinary infection, will increase the symptoms. The subjective experience of urinary urgency also varies between individuals, and probably, within the same individual. These patients are predisposed to significant retention and may require training to learn to completely empty their bladder with voiding.

There has been a recommendation *against* the usage of the term "**overflow incontinence**" in favor of terms such as *acute* or *chronic urinary retention* and (either stress or urge) *incontinence with a high post-void residual volume. Acute urinary*

retention is “a painful, palpable or percussable bladder, when the patient is unable to pass any urine”; and *chronic urinary retention* is where the patient has a “nonpainful bladder, which remains palpable or percussable after the patient has passed urine. . . (and) the patient may be incontinent.” A high postvoid residual often results from anatomic or neurogenic obstruction to urinary flow, a hypotonic or acontractile bladder, or both. The common causes are prostatic enlargement, diabetic neuropathic bladder, and urethral stricture. Low spinal cord injury and anatomic obstruction in women (pelvic prolapse and urethral distortion) are less common causes of overflow incontinence. Several drugs also can contribute to this type of incontinence .

Patients with supra sacral spinal cord lesions (e.g., multiple sclerosis) develop **detrusor–sphincter dyssynergy** causing urinary retention; in some instances, a sphincterotomy is necessary .

Functional incontinence results when an elderly person has inability or unwillingness to reach a toilet on time. Recognizing and removing these barriers to continence are important. Factors including inaccessible toilets and psychological disorders often exacerbate other types of persistent incontinence. Patients with incontinence that appears to be related to functional factors may additionally have abnormalities of the lower genitourinary tract, most commonly detrusor overactivity. In some cases, it may be difficult to assess whether the functional factors or the genitourinary factors predominate without a trial of specific types of treatment.

Many elderly people have more than one type of incontinence- a combination of urge and stress incontinence in older women often called ***mixed incontinence*** and a combination of urge and functional incontinence among nursing home residents. Many older patients have a **syndrome of "over-active bladder**," which resulting in urinary urgency, frequency, and nocturia, but may be continent. These patients should be assessed and treated in the same way as urge incontinence.

Table 3. Structural causes of persistent urinary incontinence.

	Cause	Symptoms	Signs	Post-void residual
Urge	Detrusor instability	Urge Enuresis Large volume	Often none	Low
Stress	Sphincter insufficiency	Triggers No enuresis Small volume	Atrophy Prolapse Cystocele	Low
Overflow	Outlet obstruction Detrusor underactive	Small volume Enuresis Frequency	Benign prostatic hyperplasia +/- palpable bladder Neurodeficits	High
Functional	Environment Musculoskeletal disease Cognitive impairment	Varied volume Restraints		Low

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EVALUATION:

Basic evaluation includes a detailed history (including bladder record), a general physical examination, a urine analysis, and a postvoid residual volume estimation (PVR).

The main objectives of the basic evaluation are :

1. To find out reversible causes contributing to the incontinence.
2. To find out conditions requiring further diagnostic tests and/or referral for speciality evaluation.
3. To develop a management plan including referral or to try trial of behavioral and/or pharmacologic therapy.

Certain Selected patients are subjected to any of the following appropriate investigation given below :

- Laboratory blood tests
- Culture of urine
- Cytology of urine
- Estimation of Blood glucose and calcium level
- Blood urea,serum creatinine
- Ultrasonography of kidney
- Gynecologic evaluation
- Urologic evaluation
- Cysto urethroscopy
- Urodynamic evaluation

- Voiding observation
- Cough test
- Simple cystometry
- Urine flowmetry
- Complex Multichannel cystometry
- Pressure-flow evaluation
- Leak point pressure evaluation
- Urethral pressure profilometry
- Electromyography of sphincter
- Videourodynamics studies

HISTORY:

The history should include characteristics of the incontinence, current medical co morbidities , medications usage, and the impact of the condition on the patient and caregivers, characteristics of incontinence by frequency, timing, and amount of urinary leakage; and lower urinary tract symptoms like hesitancy, intermittent stream, and straining to void. Symptoms of urge ,stress and other types of incontinence should be sought .The patient may be advised to maintain a bladder diary. It must include the volume of fluid intake, frequency and volume of continent and incontinent voids and the associated or precipitant factors. Bladder records are helpful to characterise symptoms, and in following the response to treatment.

PHYSICAL EXAMINATION:

The physical examination includes examination of abdomen, rectum, and genitalia, and evaluation of lumbo sacral innervation. The abdominal examination is not effective to find an elevated postvoid residual, but gross bladder distention (e.g., ≥500 ml) can usually be detected. In acute urinary retention, firm, midline mass that emanates from the pelvis is seen and is dull on percussion. In acute or chronic retention leading to gross distention, the superior margin of the bladder is often identifiable by either palpation or percussion.

The pelvic examination in women usually includes inspection for significant prolapse, atrophic vaginitis with signs of inflammation, and cough test to detect stress incontinence. The latter is best done in the standing position when the bladder is adequately full but without urgency. The patient is positioned over a pad or towel next to a commode and asked to cough forcefully. Leakage simultaneous with coughing indicates stress incontinence; delayed leakage or initiation of voiding indicates cough-induced bladder contraction. The cough test for stress incontinence has good specificity and reliability, but poor sensitivity.

Special attention is given to mobility and mental status, because impairments of these factors may cause incontinence or interact with urologic and neurologic disorders to worsen incontinence. In congestive heart failure or venous insufficiency with edema nocturnal incontinence can occur.

Cotton swab test:

It assesses urethral mobility in women. Here the cotton swab is inserted into the bladder through urethra.

Pad test:

It involves injection of dyes like methylene blue, phenol salicylate or benzoic acid into bladder. It identifies fluid loss in genitalia is either urine or other secretions.

Paper towel test:

This test is done at lithotomy position and then at standing position. Patient is asked to cough with a paper at a short distance from urethra. It estimates the amount of urine objectively.

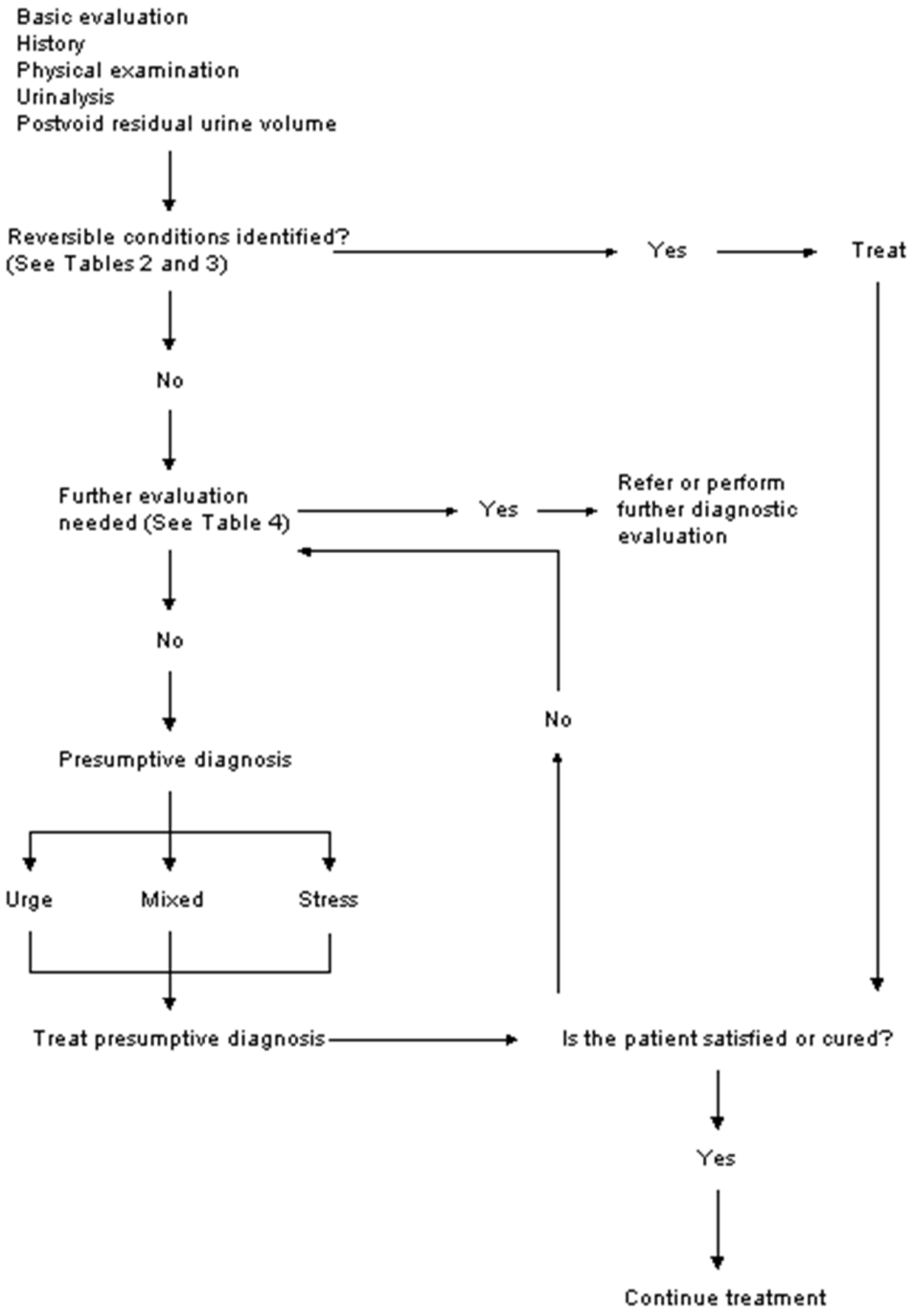
URINE ANALYSIS:

Urinalysis is performed to look for should be performed to look for pus cells, blood or sugar in urine. Clean urine specimens are very difficult to obtain from frail incontinent patients. It is usually performed without first resorting to in-and-out catheterization. For men who cannot void spontaneously, a condom-type catheter can be used to collect urine from bladder. Though acute symptomatic urinary tract infection cause incontinence, asymptomatic bacteriuria is not associated with incontinence. In hospital admitted patients, there is no benefit of treating bacteriuria in patients with chronic, stable incontinence. For other patients it is difficult to make clear recommendations. As an initial measure it is better to look for bacteruria and to eradicate it.

POST VOID RESIDUAL URINE VOLUME:

Determination of postvoid residual estimates residual urine after voiding estimates urinary retention. History or examination cannot estimate it in geriatric patients. Hence, patients at risk for retention should be subjected to PVR. Patient at risk for retention are diabetic patients, patients with neurological disorders, patients with voiding difficulty or patients with urinary retention, and patients on anti cholinergic medications. The PVR determination can be done by ultrasonography. It should be done within a few minutes of spontaneous micturition. PVR values of less than 100 mL reflects adequate bladder emptying in geriatric patients, whereas PVR values greater than 200 mL are abnormal; values in between 100 to 200 must be interpreted in the context of patient symptoms.

It is not necessary for all incontinent elderly patients to undergo a complex urologic, gynaecologic, or urodynamic evaluation. In most patients, after initial evaluation, reversible risk factors are treated. Then a combination of behavioural therapy and drug therapy are used. Among men, measurement of urinary flow rate is used to exclude obstruction and/or bladder contractility problems.


Basic evaluation
History
Physical examination
Urinalysis
Postvoid residual urine volume
Reversible conditions identified?
(See Tables 2 and 3)
Yes
Treat
No
Further evaluation
needed (See Table 4)
Yes
Refer or perform
further diagnostic
evaluation
No
No
Presumptive diagnosis
Urge
Mixed
Stress
Treat presumptive diagnosis
Is the patient satisfied or cured?
Yes
Continue treatment

MANAGEMENT:

GENERAL MANAGEMENT MEASURES:

1. Behavioral Interventions

   Measures to be taken by the patient are Pelvic muscle exercises, Bladder training, Bladder retraining.

   Patients are given some adjuncts in addition to treatment like Biofeedback, Electrical stimulation, Vaginal cones.

   Measures to be taken by the Caregiver are Scheduled toileting, Habit training, prompted voiding.

2. Drugs commonly used are Bladder relaxants, Alpha agonists, Alpha antagonists, anti androgens, Estrogen, Periurethral Injections.

3. Surgeries usually done for urinary incontinence are Bladder neck suspension surgery, surgical removal of obstruction or pathologic lesion and Sacral neuromodulation.

4. Mechanical devices commonly used for maintaining continence are Urethral plugs, Artificial sphincters, External penile clamps.

5. Nonspecific Supportive Measures used commonly are Education, Modifications of medication intake, Avoid caffeine, Use of toilet substitutes, Environmental manipulations, Garments and pads.

6. Catheters used to relieve incontinence are External, Intermittent, Indwelling urinary catheters.

MANAGEMENT PLAN FOR SPECIFIC INCONTINENCE*:*

STRESS INCONTINENCE:

It can be treated by surgical and non surgical measures.

Non-surgical treatments:

Pelvic floor exercises are the gold standard. The patient must be trained by the therapist for 6 weeks and encouraged to continue the exercises for a long period for maximum benefit.

Some patients are taught to contract their pelvic muscles by biofeedback method. Ring pesseries can be used for elderly females with uterine prolapse who are unfit for surgery.

Duloxetine is a serotonin-noradrenalin reuptake inhibitor.It increases the urethral sphincter tone by acting at spinal cord level.It is found to effective in most women.The main side effect is nausea.

Surgical procedures:

There are two procedures available for this type of incontinence.

Collagen implant can be helpful in improving continence. Collagen is injected using a cystoscope into the urethral sphincter .it is repeated every 6–18 months.

Tension-free vaginal tape (TVT) can improve continence by lifting the mid urethra. It is cheap as is done as day care procedure. Colposuspension or anterior repair of prolapse can be done if above measures fail.

URGE INCONTINENCE:

Drug treatments:

Oxybutynin (25 mg bid – 5 mg tds) and tolterodine (2mg bid to 4mg od) are used commonly.they are anti cholinergic agents

Oxybutynin is the cheapest and hence it is used as first line drug. Solifenacin (5 to 10 mg od), though anticholinergic ,cause less dry mouth and confusion because of specific action against bladder muscarinic receptors.

Trospium (20 mg bd) also causes less confusion as it does not cross the blood–brain barrier .

Surgical devices:

Sacral stimulation is done by implanting lightweight (50 g) device, e.g. InterStim, just above the buttock to stimulate the third sacral nerve.

It is used to treat overactive bladder.it controls urgency, urge incontinence and nocturia by 85%.

Botulism A injection gives a good result when injected into the detrusor muscle.it is useful in hyper reflexive bladder.

Functional incontinence is treated by caregiver mediated behavioural changes, environment manipulation, undergarments, pads, obstruction removal, antiandrogens use.

Patients with high post void residual urine are treated by double micturition, catheterisation either intermittent or indwelling.

SUMMARY OF TREATMENT OF INCONTINENCE:

TYPE OF INCONTINENCE	PRIMARY TREATMENTS
Stress	Pelvic muscle (Kegel)exercises Other behavioral interventions Alpha adrenergic agonists (none are approved for use in the United States) Periurethral injections Surgical bladder neck suspension
Urge	Bladder training Bladder relaxants
Functional	Behavioral interventions (caregiver dependent) Environmental manipulations Incontinence undergarments and pads
High postvoid residual	Surgical removal of obstruction Drugs-Anti androgens (Finasteride 5 mg od),alpha blockers (doxazosin 1mg to 4 mg od, tamsulosin 400 microgram od) Double micturition Intermittent catheterization (if practical) Indwelling catheterization

Methodology

METHODOLOGY

Study Centre :

Geriatric Medicine OPD, Rajiv Gandhi Government General Hospital, Chennai.

Study Duration :

6 months

Ethical Committee clearance :

Clearance obtained

Study Design:

Cross sectional and observational study

Sample size:

500 patients

Inclusion criteria:

Patients above 65 years of age attending Geriatric Medicine OPD and willing to participate in the study.

Exclusion criteria:

Patients not willing for study

Patients with severe cognitive impairment

Procedure:

This study includes 500 elderly patients attending Geriatric Outpatient Department in RGGGH, Chennai. Patients were selected according to inclusion and exclusion criteria and 250 males and 250 females were included in the study. Detailed history like demographic details, h/o urinary incontinence, associated comorbid

conditions were obtained. Clinical examination, Mental status examination, routine urine analysis, ultrasound abdomen and pelvis are performed. Patients were made to answer the questionnaires

Revised urinary incontinence scale (selected from Urogenital Distress Inventory, Incontinence severity index) was used to assess the type and severity of incontinence. A score of 4-8 is considered mild, a score of 9-12 is considered moderate and a score of 13 or above is considered severe.

International Prostate System Score, King's Health questionnaire, Geriatric depression scale to assess the quality of life were used

International Prostate System Score is used to assess severity and quality of life of male patients. Severity is grades as mild with score 1 to 7,moderate with score 8 to 19 and severe with score 20 to 35.Quality of life of male is scored as 0 – delighted,1 –pleased,2-mostly satisfied,3-mixed,4-mostly dissatisfied,5 – unhappy,6 – terrible.

King's Health questionnaire has 3 parts consisting of 21 items. Part 1 contains general health perception and incontinence impact (one item each). Part 2 contains role limitations, physical limitations, social limitations (two items each), personal relationships, emotions (three items each) and sleep/energy (two items), severity measures (four items). Part 3 is considered as a single item and contains ten responses in relation to frequency, nocturia, urgency, urge, stress, intercourse incontinence, nocturnal enuresis, infections, pain, and difficulty in voiding. The responses in KHQ have four point rating system. The eight subscales ("domains") scored between 0 (best)

and 100 (worst). The Symptom Severity scale is scored from 0 (best) to 30 (worst). Decreases in KHQ domain scores indicate an improvement in quality of life.

In **Geriatric depression scale ,a score of more than five is indicative of increased chance of depression.**

Analysis:

Using appropriate statistical methods, prevalence of urinary incontinence, association of demographic factors and other co morbid factors with urinary incontinence and the impact of urinary incontinence on quality of life were studied.

Conflict of interest -

None.

Sponsors -

None.

Observation & Results

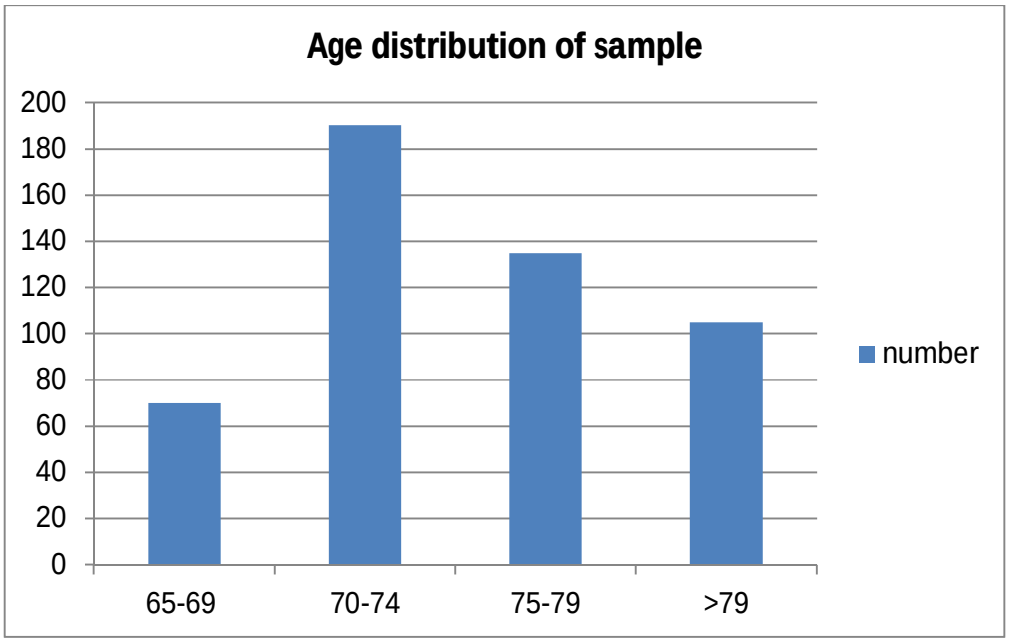
OBSERVATION AND RESULT

A total of 500 elderly population of age 65 years and above were selected in our study. Among the patients attending geriatric OPD

250 males and 250 females were included in the study.

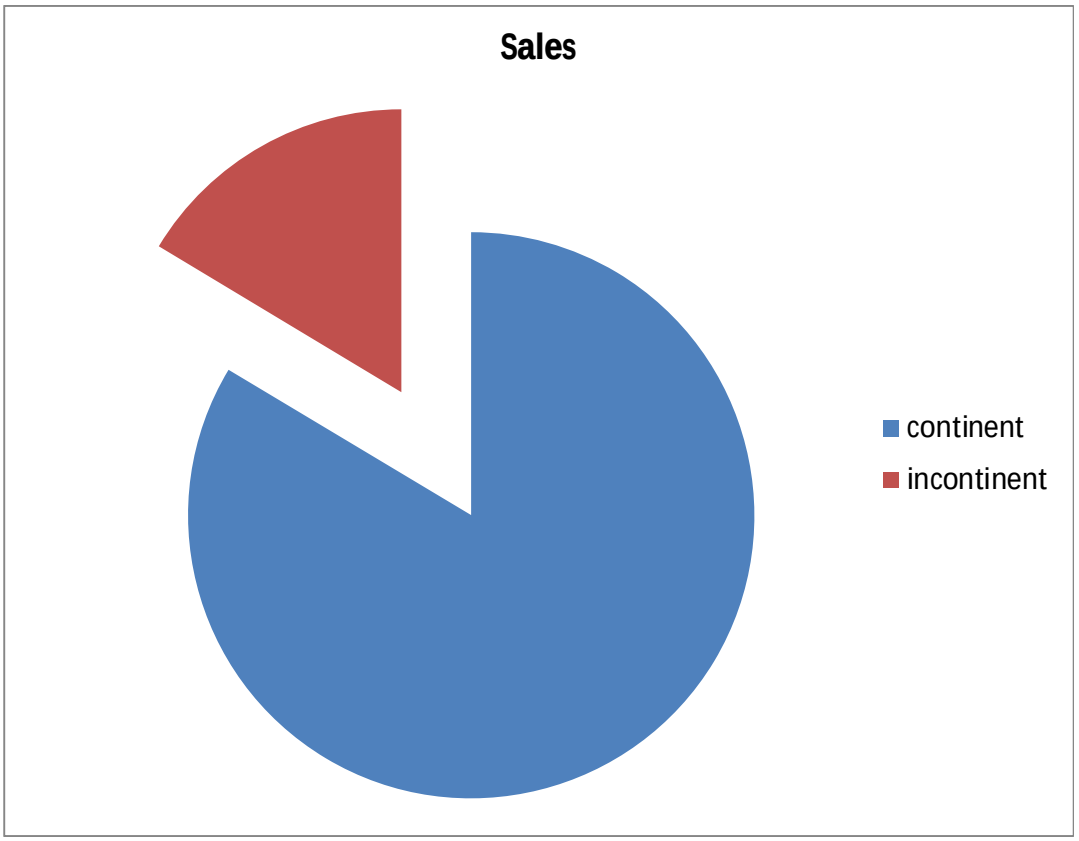
AGE CHARACTERISTIC OF SAMPLE POPULATION:

Age group (in years)	Number	Percentage (%)
65 – 69	70	14
70 - 74	190	38
75 - 79	135	27
>79	105	21



PREVALENCE OF URINARY INCONTINENCE:

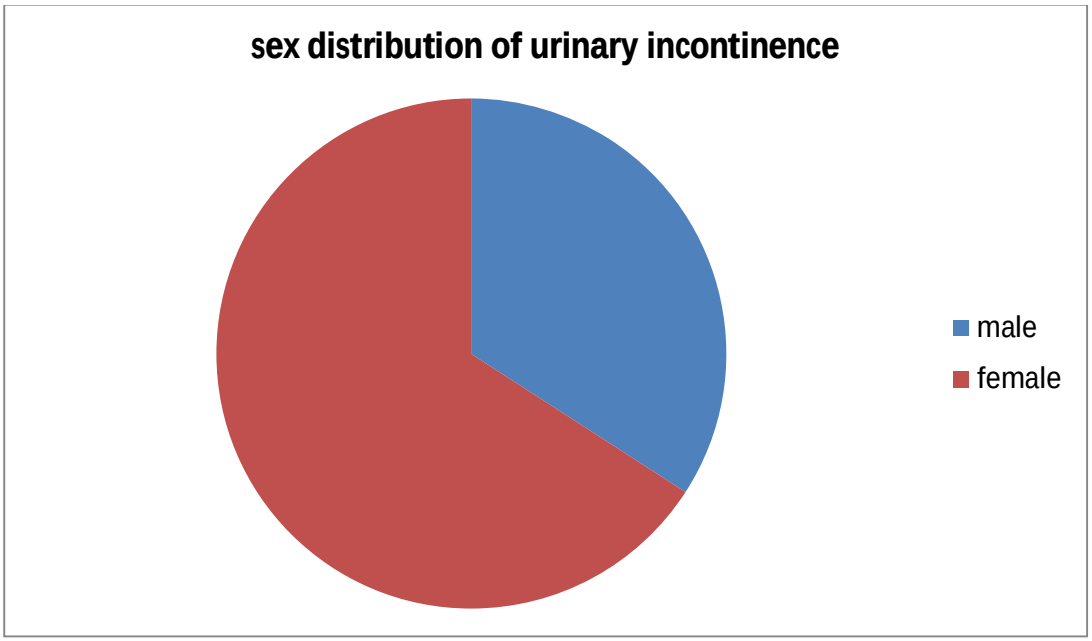
Among 500 patients evaluated, about 82 patients (16.4%) had urinary incontinence.



SEX DISTRIBUTION:

Sex	Number	Percentage (%)
Male	28	11.2
female	54	21.6
total	82	16.4

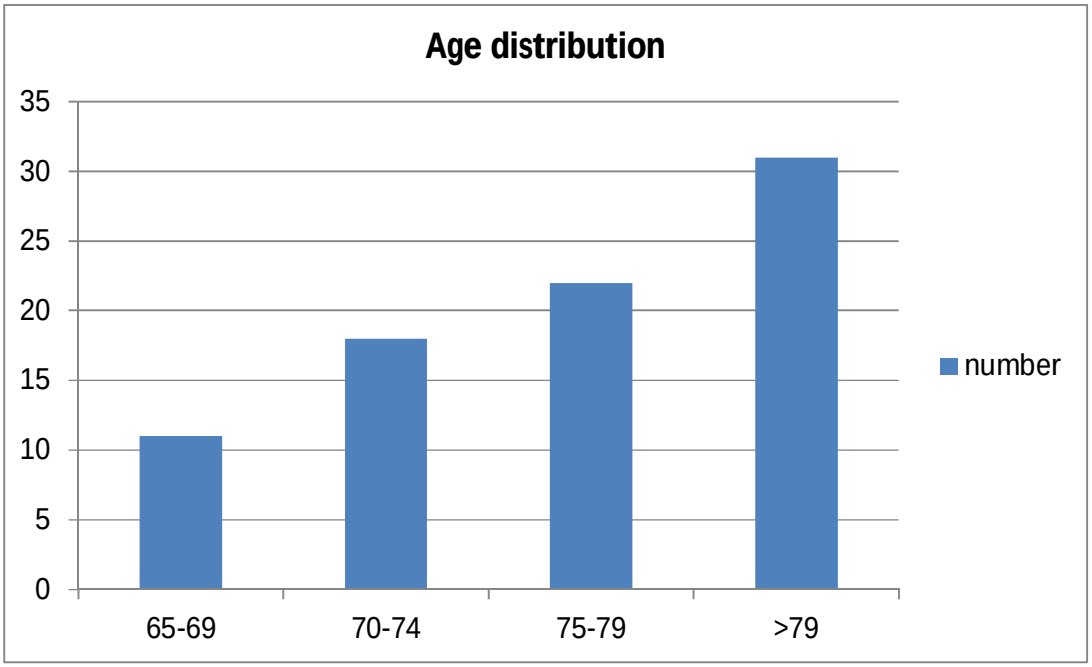
Prevalence of urinary incontinence in male is 11.2%(28 patients) and female is 21.6%(54 patients).



AGE DISTRIBUTION OF URINARY INCONTINENCE:

AGE GROUP (IN YEARS)	NUMBER	PERCENTAGE(%)
65 - 69	11	2.2
70 - 74	18	3.6
75 - 79	22	4.4
>79	31	6.2
TOTAL	82	16.4

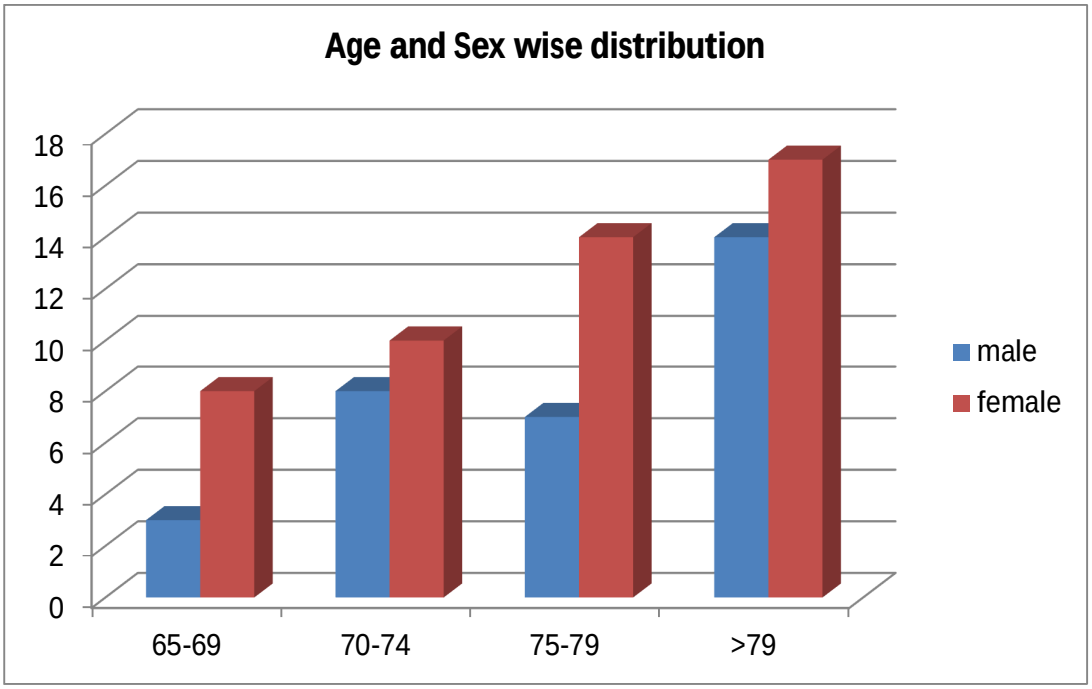
Among 82 patients 11 patients were between 65 to 69 years,18 patients were between 70 to 74 years, 22 patients were between 75 to 79 years, 31 patients were above 79 years.



AGE AND SEX WISE DISTRIBUTION:

AGE GROUP(IN YEARS)	MALE	FEMALE
65 - 69	3	8
70 - 74	8	10
74 - 79	7	14
>79	14	17

In our study it was found that female incontinence is higher than male in all age groups.



AGE > 75 YEARS AND URINARY INCONTINENCE:

		URINARY INCONTINENCE		TOTAL
		YES	NO	
AGE > 75 YEARS	YES	53	187	240
	NO	29	231	260
	TOTAL	82	418	

CHI SQUARE = 10.87

P VALUE = 0.0009

In our study 240 patients were above 75 years of age.Among 240 patients 53 patients had urinary incontinence.The association between age more than 75 years and urinary incontinence is statistically significant with p value of 0.0009.

FEMALE SEX AND URINARY INCONTINENCE:

FEMALE SEX		URINARY INCONTINENCE		TOTAL
		YES	NO	
	YES	54	196	250
	NO	28	222	250
	TOTAL	82	418	

CHI SQUARE = 9.8611

P VALUE = 0.001

In our study 250 patients were female.Among 250 patients 54 patients had urinary incontinence.The association between female sex and urinary incontinence is statistically significant with p value of 0.001.

EDUCATION LEVEL OF THE SAMPLE POPULATION:

	URINARY INCONTINENCE	**CONTINENT**	**TOTAL**
UPTO PRIMARY SCHOOL EDUCATION	52	300	352
ABOVE PRIMARY SCHOOL EDUCATION	30	118	148
TOTAL	82	418	

In our study 352 patients were illiterate or had upto primary school education. Among 352 patients 52 patients had urinary incontinence. Among 148 patients who had more than primary school education, about 30 patients had urinary incontinence.

TREATMENT SEEKING BEHAVIOUR:

Seeking treatment	Number
Less than 2 years	32
More than 2 years	50

In our study it was found that among 82 patients with urinary incontinence, about 32 patients sought medical treatment within 2 year of symptoms. However 50 patients sought medical help only after 2 years of symptom appearance.

EDUCATION LEVEL AND TREATMENT SEEKING BEHAVIOUR:

EDUCATION UPTO PRIMARY SCHOOL	SEEKING TREATMENT AFTER 2 YEARS		TOTAL
	YES	NO	
YES	40	12	52
NO	10	20	30
TOTAL	50	32	

CHI SQUARE = 15.196

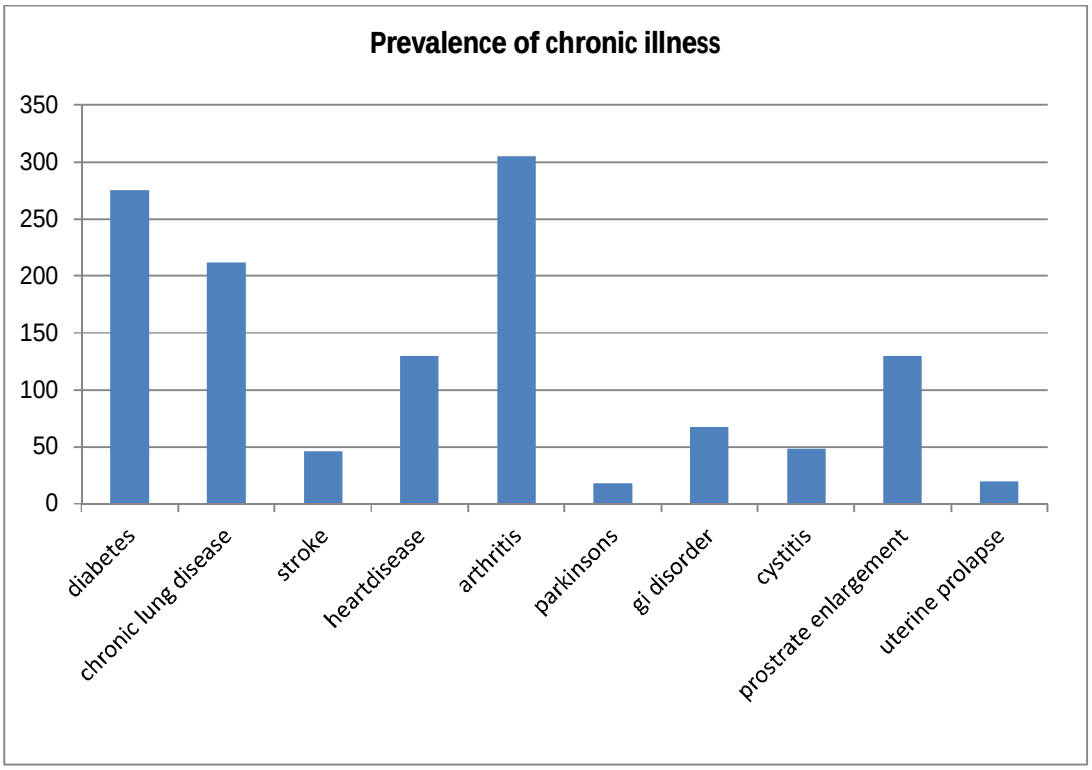
P VALUE = 0.000097

In our study 52 patients had education only upto primary school.of these 52 patients, 40 patients sought treatment after 2 years of appearance of symptoms and 12 patients sought treatment before 2 years.It was found that most of the patients with low education level had poor treatment seeking behaviour. Hence the association between low education level and poor treatment seeking behaviour is statistically significant with p value of 0.00009

PREVALENCE OF CHRONIC ILLNESS:

CHRONIC ILLNESS	NUMBER	PERCENT
DIABETIC MELLITUS	275	55 %
CHRONIC LUNG DISEASES	212	42.4%
STROKE	46	9.2%
HEART DISEASES	130	26%
ARTHRITIS	305	61%
PARKINSONS DISEASE	18	3.6%
GASTROINTESTINAL DISORDERS	68	13.6%
CYSTITIS	48	9.6%
PROSTRATE ENLARGEMENT	130	52%
UTERINE PROLAPSE	20	8%

In our study ,among 500 patients,55% of patients are diabetic,42.4% of patients had chronic respiratory disease,9.2% of patients had stroke,26% of patients had heart diseases, 61% of patients had arthritis, 3.6% of patients had parkinsons disease,13.6% gastro intestinal disorders,9.6% of patients had cystitis.among 250 male patients, about 52% of patients had prostrate enlargement.among female patients, 8% has uterine prolapse.



DIABETES AND URINARY INCONTINENCE:

		URINARY INCONTINENCE		TOTAL
		YES	**NO**	
DIABETES	YES	57	218	275
	NO	25	200	225
	TOTAL	82	418	

CHI SQUARE = 8.3464

P VALUE = 0.0038

In our study 275 patients are diabetic .Among 275 patients 57 patients had urinary incontinence. The association between diabetes mellitus and urinary incontinence was statistically significant with p value of 0.0038.

CHRONIC RESPIRATORY DISEASE AND URINARY INCONTINENCE:

CHRONIC LUNG DISEASE		URINARY INCONTINENCE		TOTAL
		YES	NO	
	YES	44	168	212
	NO	38	250	288
	TOTAL	82	418	

CHI SQUARE = 5.0908

P VALUE = 0.024

In our study 212 patients had chronic respiratory disease.Among 212 patients 44 patients had urinary incontinence.The association between chronic respiratory disease and urinary incontinence was statistically significant with p value of 0.024.

STROKE AND URINARY INCONTINENCE:

		URINARY INCONTINENCE		TOTAL
		YES	**NO**	
STROKE	YES	30	16	46
	NO	52	402	454
	TOTAL	82	418	

CHI SQUARE = 88.05

P VALUE <0.00001

In our study 46 patients were suffering from stroke.Among 46 patients 30 patients have urinary incontinence. The association between stroke and urinary incontinence was statistically significant with p value of <0.00001.

HEART DISEASES AND URINARY INCONTINENCE:

HEART DISEASES		URINARY INCONTINENCE		TOTAL
		YES	NO	
	YES	60	70	130
	NO	22	348	370
	TOTAL	82	418	

CHI SQUARE = 113.43

P VALUE < 0.00001

In our study 130 patients had heart disease. Among 130 patients 60 patients had urinary incontinence. The association between chronic respiratory disease and urinary incontinence was statistically significant with p value of 0.00001.

ARTHRITIS AND URINARY INCONTINENCE:

		URINARY INCONTINENCE		TOTAL
		YES	**NO**	
ARTHRITIS	YES	65	240	305
	NO	17	178	195
	TOTAL	82	418	

CHI SQUARE = 13.75

P VALUE = 0.0002

In our study 305 patients had arthritis. Among 305 patients 65 patients had urinary incontinence. The association between arthritis and urinary incontinence was statistically significant with p value of 0.0002.

PARKINSONS DISEASE AND URINARY INCONTINENCE:

PARKINSONS DISEASE		URINARY INCONTINENCE		TOTAL
		YES	NO	
	YES	14	4	18
	NO	68	414	482
	TOTAL	82	418	

CHI SQUARE = 51.3059

P VALUE <0.00001

In our study 18 patients had parkinsons disease. Among 18 patients 14 patients had urinary incontinence. The association between chronic respiratory disease and urinary incontinence was statistically significant with p value <0.00001.

GASTROINTESTINAL DISORDERS AND URINARY INCONTINENCE:

GASTRO INTESTINAL DISORDERS		URINARY INCONTINENCE		TOTAL
		YES	NO	
	YES	11	57	68
	NO	71	361	432
	TOTAL	82	418	

CHI SQUARE = 0.0029

P VALUE = 0.957

In our study 68 patients had gastrointestinal disorders. Among 68 patients 11 patients had urinary incontinence. The association between gastrointestinal disorder and urinary incontinence was statistically not significant with p value of 0.957

HYSTERECTOMY AND URINARY INCONTINENCE:

HYSTERECTOMY	URINARY INCONTINENCE	CONTINENT	TOTAL
YES	24	11	35
NO	30	185	215
TOTAL	54	196	

CHI SQUARE = 53.02

P VALUE <0.00001

In our study among 250 female, 35 females had undergone hysterectomy. Among 35 hysterectomised females, 24 had urinary incontinence. The association between hysterectomy and urinary incontinence was statistically significant with p value of 0.00001.

UTERINE PROLAPSE AND URINARY INCONTINENCE:

UTERINE PROLAPSE	URINARY INCONTINENCE	CONTINENT	TOTAL
YES	14	6	20
NO	40	190	230
TOTAL	54	196	

CHI SQUARE = 30.072

P VALUE <0.00001

In our study, among 250 females, 20 females had uterine prolapse. Among 20 females with uterine prolapse, 14 had urinary incontinence. The association between uterine prolapse and urinary incontinence was statistically significant with p value < 0.00001.

CYSTITIS AND URINARY INCONTINENCE:

		URINARY INCONTINENCE		TOTAL
		YES	**NO**	
CYSTITIS	YES	30	18	48
	NO	52	400	452
	TOTAL	82	418	

CHI SQUARE VALUE: 82.30

P VALUE < 0.00001

In our study, patients with cystitis were identified by their classical symptoms, urine analysis and urine culture. Among 500 patients, 48 patients had cystitis. Among 48 patients with cystitis, 30 patients experienced urinary incontinence. The association between cystitis and urinary incontinence was statistically significant with p value < 0.00001.

PROSTRATE ENLARGEMENT AND URINARY INCONTINENCE:

		URINARY INCONTINENCE		TOTAL
		YES	**NO**	
PROSTRATE ENLARGEMENT	YES	20	110	130
	NO	8	112	120
	TOTAL	28	222	

CHI SQUARE VALUE=4.768

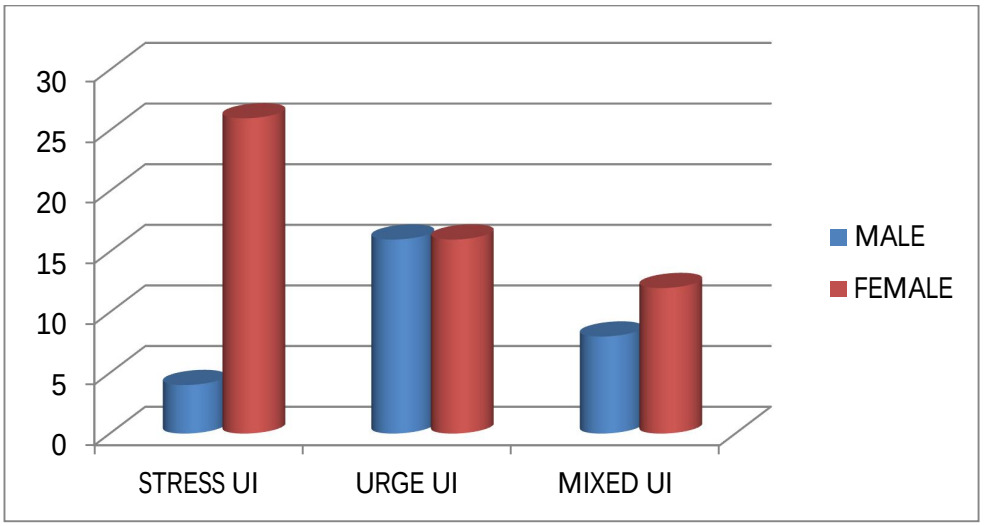
P VALUE = 0.028

In our study patients with prostrate enlargement was identified based on symptoms, mass palpable in per rectal examination, prostrate enlargement and post void residual more than 200 ml as estimated by ultrasonogram abdomen and pelvis. Among 130 males, the association between prostrate enlargement and urinary incontinence was statistically significant with p value = 0.028.

TYPE OF URINARY INCONTINENCE:

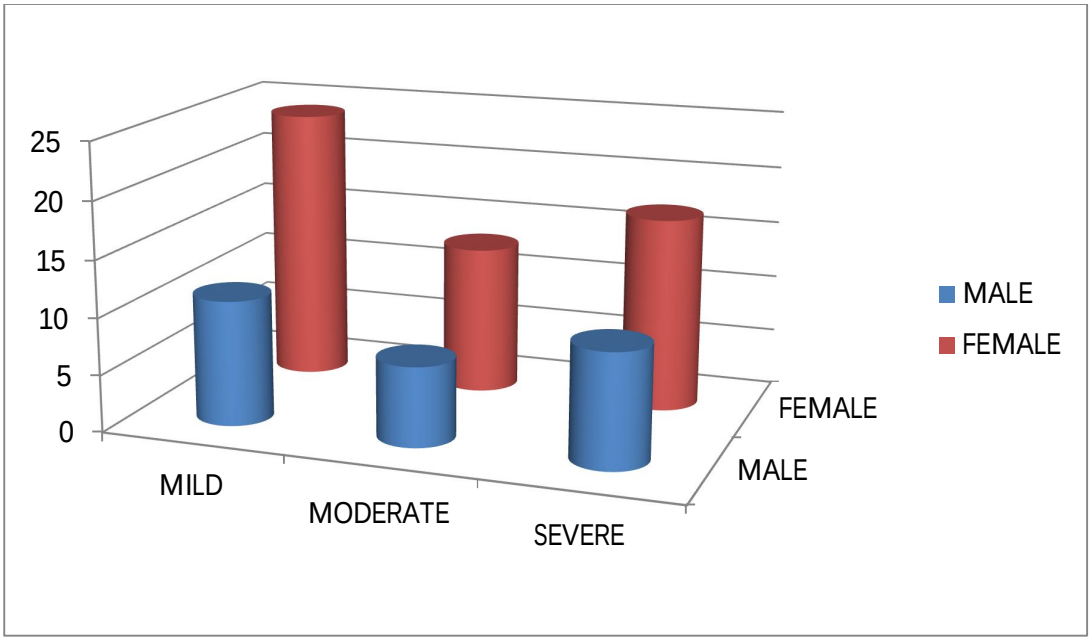
TYPE	MALE (%)	FEMALE (%)	TOTAL
STRESS INCONTINENCE	4(14.2)	26(48.1)	30
URGE INCONTINENCE	16(57.1)	16(29.6)	32
MIXED INCONTINENCE	8(28.5)	12(23)	20

Urge incontinence was common in males accounting for 57.1% and stress incontinence accounting for 14.2%. In females, stress incontinence was 48.1%. Urge incontinence was 29.6%. Mixed incontinence accounted for 28.5% in males and 23% in females.



SEVERITY OF URINARY INCONTINENCE:

SEVERITY	MALE	FEMALE
MILD	11 (39.2%)	24 (44.4%)
MODERATE	7 (25%)	13 (24%)
SEVERE	10 (35.7%)	17(31.4%)
TOTAL	28	54

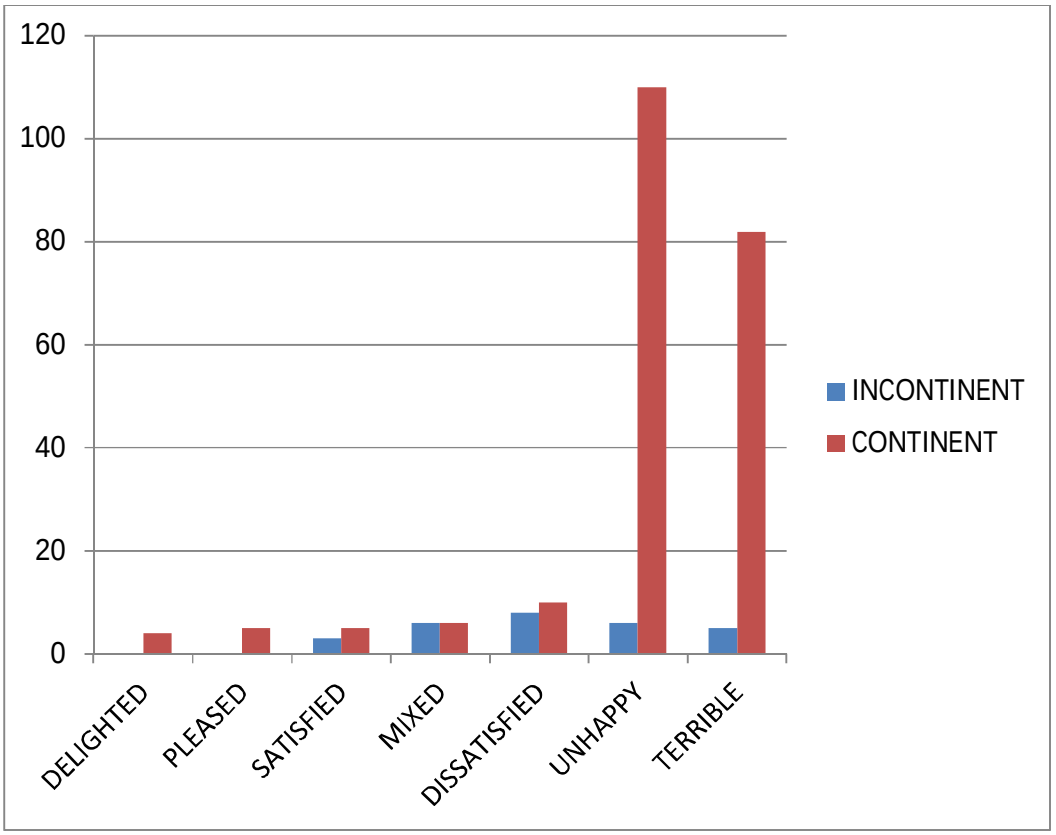


Using RUIS severity of incontinence was recorded. It was found that 39.2% of men and 44.4% of women had mild incontinence, 25% of men ,24% of women had moderate incontinence and 35.7% of men ,31.4% of women had severe incontinence.

IMPACT OF MALE URINARY INCONTINENCE ON QUALITY OF LIFE:

QUALITY SCORE	URINARY INCONTINENT	CONTINENT
0 = DELIGHTED	0	4(1.8%)
1 = PLEASED	0	5(2.2%)
2 = MOSTLY SATISFIED	3(10.7%)	5(2.2%)
3 = MIXED	6(21.4%)	6(2.7%)
4 = MOSTLY DISSATISFIED	8(28.5%)	10(4.5%)
5 = UNHAPPY	6(21.4%)	110(49.5%)
6 = TERRIBLE	5(17.8%)	82(36.9%)

Using IPSS, quality of life was measured in male patients .It was found that good quality score like, 0=delighted ,1=pleased,2=satisfied,3=mixed,4=dissatisfied was present in 0%,0%,10.7%,21.4%,28.5% respectively in patients with urinary incontinence. Poor score like 5=unhappy, 6=terrible was present in 21.4%,17.8% of the other incontinent patients.


120
100
80
60
40
20
0
DELIGHTED
PLEASED
SATISFIED
MIXED
DISSATISFIED
UNHAPPY
TERRIBLE
INCONTINENT
CONTINENT

	URINARY INCONTINENCE	**CONTINENT**	**TOTAL**
POOR SCORE (5 OR 6)	17	30	47
BETTER SCORE (0 TO 4)	11	192	203
TOTAL	28	222	

CHI SQUARE = 36.28

P VALUE = 0.00001

In our study 28 male patients had urinary incontinence. Among 28 male patients, 17 had poor quality of life. The association between poor quality of life and urinary incontinence was statistically significant with p value of 0.00001.

IMPACT OF FEMALE URINARY INCONTINENCE ON QUALITY OF LIFE:

VARIABLE	URINARY INCONTINENCE	CONTINENT	P VALUE
GENERAL HEALTH PERCEPTION	30	140	0.026
IMPACT OF INCONTINENCE	20	96	0.119
DAILY ACTIVITIES LIMITATION	28	138	0.028
PHYSICAL LIMITATION	32	145	0.025
SOCIAL LIMITATION	30	150	0.022
PERSONAL RELATIONSHIP	40	30	<0.00001
EMOTIONS	14	110	0.0008
SLEEP AND ENERGY	22	94	0.101

Using kings questionnaire, all female patients were assessed for quality of life. Each parameter was expressed as a percentage. Patients with more than 50% score were considered to have impaired or poor score in that parameter. Patients with poor score were compared in urinary incontinence and continence group. p value found .It was found that association of urinary incontinence in women with poor general health perception, daily activities limitation, social limitation and personal relationship limitation was significant as p value was < 0.05.

DEPRESSION AND URINARY INCONTINENCE:

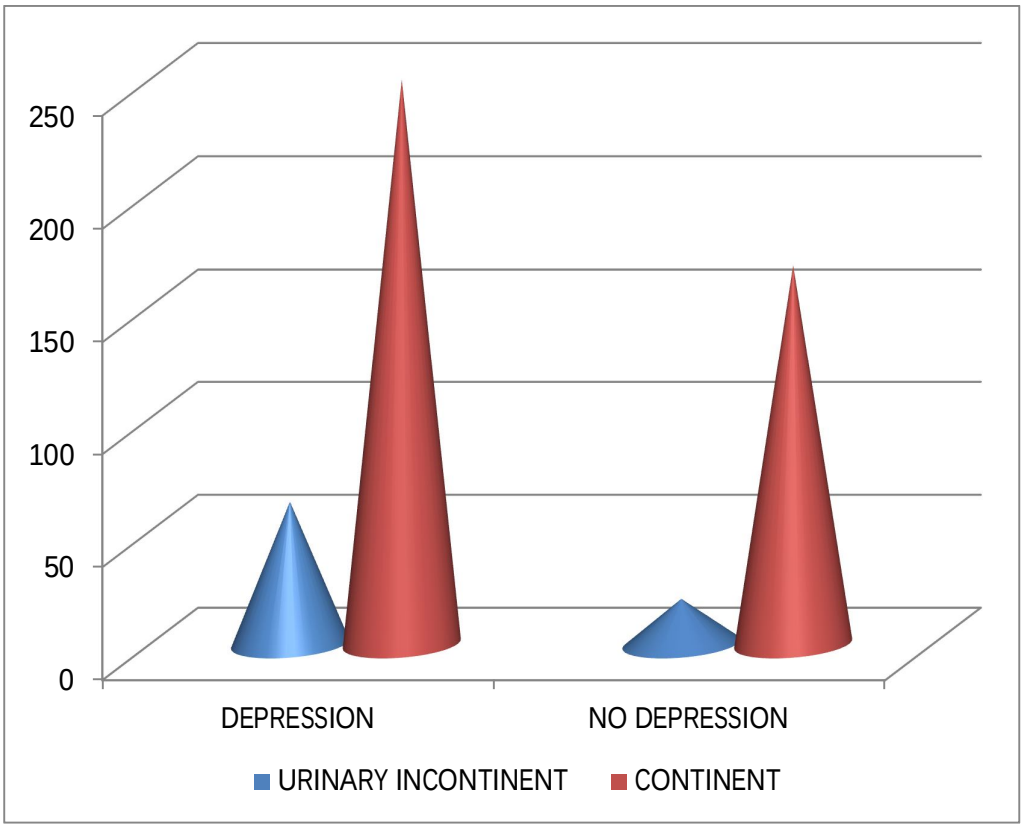
	URINARY INCONTINENCE	**CONTINENT**	**TOTAL**
DEPRESSION	62(75.6%)	250(59.8%)	312
NO DEPRESSION	20(24.3%)	168(40.1%)	188
TOTAL	82	418	

CHI SQUARE = 7.65

P VALUE = 0.0056

Using GDS, patients were screened for depression. It was found that 75.6% of patients with urinary incontinence had depression.24.3% of patients with urinary incontinence were normal without any feature of depression. Similarly 59.8% of continent patients had depression and 40.1% of continent patients were normal.

In our study 82 patients had urinary incontinence. Among 82 patients 62 patients had depression. The association between depression and urinary incontinence was statistically significant with p value of 0.0056.



Discussion

DISCUSSION

Urinary incontinence is a highly prevalent condition in elderly and deeply affects quality of life because of its negative effects on social interactions and physical health. In this study, prevalence of urinary incontinence in elderly attending OPD in tertiary care centre, factors associated with it and its impact on quality of life are studied.

Chan et al. found that the prevalence of urinary incontinence was 14.5% . Mayo et al estimated that at least 15% of community-dwelling elderly individuals and 50% of institutionalised elderly persons have significant urinary incontinence. Samuelsson et al found the prevalence of urinary incontinence in the community ranged from 9 to 45%. Ourfinding of 16.4% is also in this range and is in accordance with these studies

According to Araújo et al, Urinary Incontinence increases with age. A similar trend was found in our study . The association between aging and UI can be partially explained by ultrastructural changes in detrusor muscle, development of fibrosis and hypersensitivity to norepinephrine, causing involuntary contractions of the muscle, decreased bladder volume, early detrusor contraction.

Veneto study demon-strated that female urinary incontinence was five times more common than male incontinence in the community. Diokno et al., 1986; Schulman et al., 1997 found that urinary incontinence is significantly more prevalent in women than in men in all life decade.

The literature shows that the highest prevalence of UI in women is because of the difference in urethral length between female and male, the anatomy of the pelvic floor, the effects of pregnancy and delivery in continence mechanisms leading to future prolapsed utreus, and hormonal alterations, characterized by exhaustion of ovarian follicles and progressive hypoestrogenism.. Further post hysterectomised women are found to have a greater association with urinary incontinence. In accordance with above results our study also showed increased prevalence of urinary incontinence among women than men.

T Ueda et al found that (i) the incidence of urge incontinence(urge + mixed) increased as age increases in the male group; (ii) for females, stress incontinence was prevalent at all ages; and (iii) the incidence of urge in-continence (urge + mixed) was increased in female respondents aged over 70 years. It was found in our study that stress incontinence was more prevalent in female of all ages, urge incontinence was common in males.

Tomohiro euda et al found that incontinence in women was 33% and related to diabetes, cystitis and post hysterectomy status. His study stated that urge incontinence in males was mainly due to prostatic symptoms and to a lesser extent due to stroke and cystitis. According to the literature, respiratory problems may be related to the risk of urinary incontinence. This may be due to chronic cough or sneezing, which increases intra-abdominal pressure causing damage to the pelvic floor.

Another associated disease in our study was stroke which was in line with the results presented and stated in the KNOW study. This association may be explained by brain damage caused by the disease.

Studies have documented that as the degree of functional dependence increases, the prevalence of incontinence increases as well as in arthritis, stroke and parkinson's disease. Steffania magi et al found that physical disability was a positive risk factor for functional incontinence in this population, due to problems in mobility and neurological impairments.

In addition to functional incontinence arthritis may also lead to urge incontinence. Patients with restricted mobility usually reduce their fluid intake hoping that it may reduce the number of trips to the toilet. But reduced fluid intake actually makes the urine concentrated. This irritates the bladder. Hence it empties often causing and increase in frequency of micturition and urge incontinence.

In our study it was found that factors like diabetes ,heart disease, stroke, chronic respiratory diseases, arthritis, parkinsons disease, urinary tract infection, prostate enlargement had a significant positive association with urinary incontinence.

Tomohiro euda et al study also concluded that less schooling (0 and 1 to 4 years) was associated with higher prevalence of UI, which is similar to the literature.

Bolina et al. demonstrated that the absence of schooling was associated with 83% higher chance of having UI. Our study too found that low education level was associated with delayed health seeking behaviour.

Researches have shown that urinary incontinence can adversely affect quality of life, leading to depression, negative affect, low life satisfaction, and restriction of activities. The elderly tend to be embarrassed of their problem and may even experience a sense of guilt. They are reluctant to go out and socialise because of their problem. This eventually leads to self-imposed social isolation. It was found in our study that quality of life was adversely affected by urinary incontinence in both sexes. It was also found that depressive symptoms were more in patients with urinary incontinence. It was inferred that as the severity of urinary incontinence increases, quality of life decreases and the patients had depression, negative effect, low life satisfaction and restriction of activities as well as social isolation.

Limitation

LIMITATIONS

1. Our study was a cross sectional study. Hence cause-effect association between incontinence and health conditions could not be assessed .

2. Information on medical conditions and physical functioning was self-reported.

3. Study period was 6 months.

4. Since this study was conducted in outpatient department, only active elders participated.

5. Large scale home based longitudinal study should be done.

Conclusion

CONCLUSION

- Prevalence of urinary incontinence in elderly ≥65 years attending outpatient department in tertiary care hospital is 16.4 %.

- Prevalence of urinary incontinence in females is high (21.6%) in comparison with males (11.2%).

- Age >75, female sex, diabetes ,heart disease, stroke, chronic respiratory diseases, arthritis, parkinsons disease, cystits, prostate enlargement, post hysterectomy are important factors associated with urinary incontinence.

- Quality of life is poor in most of the patients with urinary incontinence and they have depression (75.6%).

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Annexures

INSTITUTIONAL ETHICS COMMITTEE
MADRAS MEDICAL COLLEGE, CHENNAI 600 003

EC Reg.No.ECR/270/Inst./TN/2013
Telephone No.044 25305301
Fax: 011 25363970

CERTIFICATE OF APPROVAL

To
Dr.M.Vidyalakshmi
Post Graduate in M.D. (Geriatrics)
Madras Medical College
Chennai 600 003

Dear Dr.M.Vidyalakshmi,

The Institutional Ethics Committee has considered your request and approved your study titled **"FACTORS INFLUENCING URINARY INCONTINENCE IN ELDERLY AND ITS IMPACT ON QUALITY OF LIFE" - NO.(II) 16032016.**

The following members of Ethics Committee were present in the meeting hold on **22.03.2016** conducted at Madras Medical College, Chennai 3

1.Dr.C.Rajendran, MD.,	:Chairperson
2.Dr.R.Vimala,MD.,Dean,MMC,Ch-3	:Deputy Chairperson
3.Prof.Sudha Seshayyan,MD., Vice Principal,MMC,Ch-3	: Member Secretary
4.Prof.P.Raghumani,MS, Dept.of Surgery,RGGGH,Ch-3	: Member
5.Dr.Baby Vasumathi, Director, Inst. of O&G,Ch-8	: Member
6.Prof.M.Saraswathi,MD.,Director, Inst.of Path,MMC,Ch-3	: Member
7.Prof.Srinivasagalu,Director,Inst.of Int.Med.,MMC,Ch-3	: Member
8.Tmt.J.Rajalakshmi, JAO,MMC, Ch-3	: Lay Person
9.Thiru S.Govindasamy, BA.,BL,High Court,Chennai	: Lawyer
10.Tmt.Arnold Saulina, MA.,MSW.,	:Social Scientist

We approve the proposal to be conducted in its presented form.

The Institutional Ethics Committee expects to be informed about the progress of the study and SAE occurring in the course of the study, any changes in the protocol and patients information/informed consent and asks to be provided a copy of the final report.

31/3/16
Member Secretary – Ethics Committee

MEMBER SECRETARY
INSTITUTIONAL ETHICS COMMITTEE
MADRAS MEDICAL COLLEGE
CHENNAI-600 003

MADRAS MEDICAL COLLEGE
31 MAR 2016
CHENNAI-600 003

INFORMATION SHEET

We are conducting a study titled **"FACTORS INFLUENCING URINARY INCONTINENCE IN ELDERLY AND ITS IMPACT ON QUALITY OF LIFE"** among patients attending Rajiv Gandhi Government General Hospital, Chennai and for that your specimen may be valuable to us.

The purpose of this study is to evaluate the factors influencing urinary incontinence in elderly and its impact on quality of life

We are selecting certain cases and if you are found eligible, we may be using your blood and urine samples to do special studies which in any way do not affect your final report or management.

The privacy of the patients in the research will be maintained throughout the study. In the event of any publication or presentation resulting from the research, no personally identifiable information will be shared.

Taking part in this study is voluntary. You are free to decide whether to participate in this study or to withdraw at any time; your decision will not result in any loss of benefits to which you are otherwise entitled.

The results of the special study may be intimated to you at the end of the study period or during the study if anything is found abnormal which may aid in the management or treatment.

Signature of investigator Signature of participant

Date:

Place: Chennai.

PATIENT CONSENT FORM

Study Detail : **FACTORS INFLUENCING URINARY INCONTINENCE IN ELDERLYAND ITS IMPACT ON QUALITY OF LIFE**

Study Centre : Rajiv Gandhi Govt. General Hospital, Chennai.

Patient's Name :

Patient's Age :

Identification No. :

Patient may check (✓) these boxes:

a) I confirm that I have understood the purpose of procedure for the above study. I have the opportunity to ask question and all my questions and doubts have been answered to my complete satisfaction. ☐

b) I understand that my participation in the study is voluntary and that I am free to withdraw at any time without giving reason, without my legal rights being affected. ☐

c) I understand that sponsor of the clinical study, others working on the sponsor's behalf, the ethical committee and the regulatory authorities will not need my permission to look at my health records, both in respect of current study and any further research that may be conducted in relation to it, even if I withdraw from the study I agree to this access. However, I understand that my identity will not be revealed in any information released to third parties or published, unless as required under the law. I agree not to restrict the use of any data or results that arise from this study. ☐

d) I agree to take part in the above study and to comply with the instructions given during the study and faithfully cooperate with the study team and to immediately inform the study staff if I suffer from any deterioration in my health or wellbeing or any unexpected or unusual symptoms. ☐

e) I hereby consent to participate in this study. ☐

f) I hereby give permission to undergo complete clinical examination and hematological tests. ☐

Signature / Thumb Impression

Signature of Investigator

Patient's Name & Address:

Study Investigator's Name :
Dr. M.VIDYALAKSHMI

PROFORMA

NAME:	AGE:	SEX:

OP.NO:

OCCUPATION:

PLACE:

LITERACY:

G.M.NO:

CLINICAL HISTORY:

PAST HISTORY:

Hypertension	Diabetes mellitus	COPD/ Bronchial Asthma
Hypothyroidism	CAD	CKD
CLD	CVA	Others

MEDICATIONS:

PERSONAL HISTORY:

FAMILY HISTORY:

GENERAL EXAMINATION

Built	Pallor	Icterus	Cyanosis
Clubbing	edema	Lymphadenopathy	
Height	Weight	BMI	

SYSTEMIC EXAMINATION:

CVS-
RS-
ABDOMEN-
CNS-
MMSE-
PER RECTAL-
PER VAGINAL-

INVESTIGATION:

RANDOM BLOOD SUGAR

URINE ANALYSIS

URINE CULTURE

ULTRASOUND ABDOMEN AND PELVIS

REVISED URINARY INCONTINENCE SCALE

1. Urine leakage related to the feeling of urgency

Not at all	*0*
Slightly	*1*
Moderately	*2*
Greatly	*3*

2. Urine leakage related to physical activity, coughing or sneezing

Not at all	*0*
Slightly	*1*
Moderately	*2*
Greatly	*3*

3. Small amounts of urine leakage (drops)

Not at all	*0*
Slightly	*1*
Moderately	*2*
Greatly	*3*

Scoring

4. How often do you experience urine leakage?

Never	*0*
Less than once a month	*1*
A few times a month	*2*
A few times a week	*3*
Every day and/or night	*4*

5. How much urine do you lose each time?

None	*0*
Drops	*1*
Small splashes	*2*
More	*3*

INTERNATIONAL PROSTATE SYMPTOM SCORE (I-PSS)

Patient Name: _____ Date of birth: _____ Date completed _____

In the past month	Not at All	Less than 1 in 5 Times	Less than Half the Time	About Half the Time	More than Half the Time	Almost Always	Your score
1. Incomplete Emptying How often have you had the sensation of not emptying your bladder?	**0**	**1**	**2**	**3**	**4**	**5**	
2. Frequency How often have you had to urinate less than every two hours?	**0**	**1**	**2**	**3**	**4**	**5**	
3. Intermittency How often have you found you stopped and started again several times when you urinated?	**0**	**1**	**2**	**3**	**4**	**5**	
4. Urgency How often have you found it difficult to postpone urination?	**0**	**1**	**2**	**3**	**4**	**5**	
5. Weak Stream How often have you had a weak urinary stream?	**0**	**1**	**2**	**3**	**4**	**5**	
6. Straining How often have you had to strain to start urination?	**0**	**1**	**2**	**3**	**4**	**5**	
	None	**1 Time**	**2 Times**	**3 Times**	**4 Times**	**5 Times**	
7. Nocturia How many times did you typically get up at night to urinate?	**0**	**1**	**2**	**3**	**4**	**5**	
Total I-PSS Score							
Score: 1-7: *Mild* 8-19: *Moderate* 20-35: *Severe*							

Quality of Life Due to Urinary Symptoms	Delighted	Pleased	Mostly Satisfied	Mixed	Mostly Dissatisfied	Unhappy	Terrible
If you were to spend the rest of your life with your urinary condition just the way it is now, how would you feel about that?	0	1	2	3	4	5	6

BRITISH SOCIETY OF UROGYNAECOLOGY

King's Health Questionnaires (KHQ)

Q1. GENERAL HEALTH PERCEPTION: How would you describe your health at present?	○ Very good	○ Good	○ Fair	○ Poor	○ Very poor
Q2. INCONTINENCE IMPACT: How much do you think your bladder problem affects your life?	○ Not at all	○ A little	○ Moderately	○ A lot	
Q3. ROLE LIMITATIONS: Does your bladder problem affect					
A. your house hold tasks e.g. cleaning, shopping etc?	○ Not at all	○ A little	○ Moderately	○ A lot	
B. your job or normal daily activities outside the home?	○ Not at all	○ A little	○ Moderately	○ A lot	
Q4. PHYSICAL LIMITATIONS: Does your bladder problem affect					
A. your physical activities (e.g., going for walk, run, sports, gym, etc.)?	○ Not at all	○ A little	○ Moderately	○ A lot	
B. your affect travel?	○ Not at all	○ A little	○ Moderately	○ A lot	
Q5. SOCIAL LIMITATIONS: Does your bladder problem limit					
A. your social life	○ Not at all	○ A little	○ Moderately	○ A lot	
B. your limit your ability to see / visit friends?	○ Not at all	○ A little	○ Moderately	○ A lot	
Q6. PERSONAL RELATIONSHIPS: Does your bladder problem affect					
A. your relationship with your partner?	○ Not at all	○ A little	○ Moderately	○ A lot	○ Not applicable
B. your sex life?	○ Not at all	○ A little	○ Moderately	○ A lot	○ Not applicable
C. your family life?	○ Not at all	○ A little	○ Moderately	○ A lot	○ Not applicable
Q7. EMOTIONS: Does your bladder problem make					
A. you feel depressed?	○ Not at all	○ A little	○ Moderately	○ Very much	
B. you feel anxious and nervous?	○ Not at all	○ A little	○ Moderately	○ Very much	
C. you feel bad about yourself?	○ Not at all	○ A little	○ Moderately	○ Very much	
Q8. SLEEP / ENERGY : Does your bladder problem					
A. afect your sleep?	○ Not at all	○ A little	○ Moderately	○ A lot	
B. make you feel worn out and tired?	○ Not at all	○ A little	○ Moderately	○ A lot	
Q9. SEVERITY MEASURES:					
A: Wear pads to keep dry?	○ Never	○ Sometimes	○ Often	○ All the time	
B: Be careful how much fluid you drink?	○ Never	○ Sometimes	○ Often	○ All the time	
C: Change your underclothes because they get wet	○ Never	○ Sometimes	○ Often	○ All the time	
D: Worry in case you smell	○ Never	○ Sometimes	○ Often	○ All the time	
Q10. SYMPTOM SEVERITY SCALE					
A. Frequency of urination	○ None	○ Mild	○ Moderate	○ Severe	
B. Nocturia	○ None	○ Mild	○ Moderate	○ Severe	
C. Urgency	○ None	○ Mild	○ Moderate	○ Severe	
D. Urge Incontinence	○ None	○ Mild	○ Moderate	○ Severe	
E. Stress Incontinence	○ None	○ Mild	○ Moderate	○ Severe	
F. Nocturnal Enuresis	○ None	○ Mild	○ Moderate	○ Severe	
G. Intercourse Incontinence	○ None	○ Mild	○ Moderate	○ Severe	
H. Waterworks infection	○ None	○ Mild	○ Moderate	○ Severe	
I. Bladder pain	○ None	○ Mild	○ Moderate	○ Severe	
J. Postvoid dribble	○ None	○ Mild	○ Moderate	○ Severe	

Calculation of Scores

Q1. Very good=1, Good=2, Fair=3, Poor=4, Very poor=5	Q1 Overall Score= ((Actual Score – 1) / 4) x 100
Q2. Not at all=1, A little=2, Moderately=3, A lot=4	Q2 Overall Score= ((Actual Score – 1) / 3) x 100
Q3. Not at all=1, A little=2, Moderately=3, A lot=4	Q3 Overall Score= ((Actual Total Score – 2) / 6) x 100
Q4. Not at all=1, A little=2, Moderately=3, A lot=4	Q4 Overall Score= ((Actual Total Score – 2) / 6) x 100
Q5. Not at all=1, A little=2, Moderately=3, A lot=4	Q5 Overall Score depends upon Q6C Score
If Q6 C response is "Not Applicable"	Q5 Overall Score= ((Actual Total Score – 2) / 6) x 100
If Q6 C response is other than "Not Applicable"	Q5 Overall Score= (Sum of scores to 5A, 5B, 6C)-3 /9 X 100
Q6. Not at all=1, A little=2, Moderately=3, A lot=4, Not applicable=0	
If (6A+6B) ≥ 2	Q6 Overall score is (Sum of scores to 6A, 6B)-2 /6 X 100
If (6A+6B) =1	Q6 Overall score is (Sum of scores to 6A, 6B)-1 /3 X 100
If (6A+6B) =0	Q6 Score should be treated as missing value
Q7. Not at all=1, A little=2, Moderately=3, Very much=4	Q7 Overall Score= (Sum of scores to 7A, 7B, 7C)-3 /9 X 100
Q8. Not at all=1, A little=2, Moderately=3, A lot=4	Q8 Overall Score= ((Actual Total Score – 2) / 6) x 100
Q9. Never=1, Sometimes=2, Often=3, All the time=4	Q9 Overall Score: (Actual Total Score -4) / 12 X 100
Q10. None=0, Mild=1, Moderate=2, Severe=3 (for Responses A to J)	Q10 Overall Score is the total of responses to ten questions.

PART 1 SCORE = (Q1. OVERALL SCORE) + (Q2. OVERALL SCORE)

PART 2 SCORE = OVERALL SCORE OF Q3 to Q9

PART 3 SCORE = OVERALL SCORE OF Q10

GERIATRIC DEPRESSION SCALE (SHORT VERSION)

Name:_____
Date of Assessment:_____ Completed By: _____
Jerome A Yesavage Geriatric Depression Scale Psychopharmacology Bulletin (1988) 24:4;709-711

Instructions:
Each answer counts one point.
Total score greater than five indicates probably depression.

Issues:
The GDS is a screening tool and not a diagnosis. Where a score of more than five is indicated, a more thorough clinical investigation should be undertaken.

Feher et al.37 have concluded that the GDS is a generally valid measure of the mild-to moderate depressive symptoms in Alzheimer patients with mild-to moderate dementia.

The right hand column shows test answers which are positive for depression

No:	Questions:	Answer:	Test Answers:
1.	Are you basically satisfied with your life?	Yes / No	No
2.	Have you dropped many of your activities or interests?	Yes / No	Yes
3.	Do you feel that your life is empty?	Yes / No	Yes
4.	Do you often get bored?	Yes / No	Yes
5.	Are you in good spirits most of the time?	Yes / No	No
6.	Are you afraid that something bad is going to happen to you?	Yes / No	Yes
7.	Do you feel happy most of the time?	Yes / No	No
8.	Do you feel helpless?	Yes / No	Yes
9.	Do you prefer to stay at home, rather than go out and do things?	Yes / No	Yes
10.	Do you feel that you have more problems with memory than most?	Yes / No	Yes
11.	Do you think it is wonderful to be alive now?	Yes / No	No
12.	Do you feel pretty worthless the way you are now?	Yes / No	Yes
13.	Do you feel full of energy?	Yes / No	No
14.	Do you feel that your situation is hopeless?	Yes / No	Yes
15.	Do you think that most people are better off then you are?	Yes / No	Yes
	Total Score		

When a score of more than five is indicated, a more thorough clinical investigation should be undertaken.

URKUND

Urkund Analysis Result

Analysed Document: urinary incontinence factors and qol.docx (D27650145)
Submitted: 2017-04-27 22:55:00
Submitted By: vidyalakshmi.m.89@gmail.com
Significance: 11 %

Sources included in the report:

http://www.fmshk.org/article/121.pdf
http://flylib.com/books/en/1.431.1.14/1/
https://accessmedicine.mhmedical.com/content.aspx?sectionid=144522371&bookid=1923&Resultclick=2
http://oncohemakey.com/incontinence/

Instances where selected sources appear:

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ABBREVIATION

KEY FOR MASTER CHART

M	-	MALE
F	-	FEMALE

EDUCATION LEVEL

P	-	PRIMARY SCHOOL
S	-	SECONDARY SCHOOL

SEVERITY

ML	-	MILD
S	-	SEVERE
MO	-	MODERATE

SUI	-	STRESS URINARY INCONTINENCE
UUI	-	URGE URINARY INCONTINENCE
MUI	-	MIXED URINARY INCONTINENCE
DM	-	DIABETES MELLITUS
CVA	-	CEREBROVASCULAR ACCIDENT
CRD	-	CHRONIC RESPIRATORY DISEASE
HD	-	HEART DISEASE
AR	-	ARTHRITIS
PD	-	PARKINSON DISEASE
CYS	-	CYSTITIS
HYS	-	POST HYSTERECTOMY
GIT	-	GASTROINTESTINAL DISORDER
UP	-	UTERINE PROLAPSE
BPH	-	BENIGN PROSTATIC HYPERTROPHY

MASTER CHART

S.No.	AGE	SEX	EDU. LEVEL	INCONTINENCE	TYPE	SEVERITY	FACTORS	QOL	DEPRESSION
1	65	f	s				dm,ar,git	75,66.6,83.3,83.3,100,16.6,83.3,66.6	
2	72	m	p				crl,ar	5	
3	65	m	p	y	uui	ml	dm,crl,cva,cys	4	y
4	78	m	p				dm,hd,git,cva	6	
5	66	m	s				crl,ar,bph	5	
6	81	m	p				dm,hd,bph	0	
7	72	m	p				crl,ar,bph	6	
8	68	f	p	y	sui	s	dm,hd,ar	25,0,66.6,66.6,66.6,83.3,0,66.36	y
9	66	f	p				dm	25,33.3,16.6,16.6,0,16.6,16.6,16.6	
10	80	f	s				crl,ar	0,33.3,83.3,83.3,83.3,16.6,83.3,16.6	
11	72	f	p				dm,ar	100,100,33.3,83.3,66.6,83.3,83.3,83.3	
12	67	m	s	y	sui	ml	dm,cva,hd,ar,bph	5	
13	75	f	p				dm	100,100,33.3,83.3,66.6,83.3,83.3,83.3	
14	68	f	s				dm,ar,git	75,33.3,100,83.3,83.3,0,83.3,33.3	
15	72	m	p				crl,ar,cva	5	
16	72	m	p	y	mui	ml	dm,crl,hd,pd,git	5	y
17	72	m	p				dm,hd,git	5	
18	72	m	s				crl,ar,bph	1	
19	70	m	p	y	uui	mo	dm,crl,hd,ar,bph	5	y
20	69	m	p				dm,hd,bph	6	
21	81	m	s				crl,ar,bph,cva	5	
22	80	f	p				dm	75,66.6,83.3,83.3,100,16.6,83.3,66.6	
23	74	f	s	y	uui	ml	dm,hd,ar,cys	50,66.6,0,0,0,16.6,16.6,83	
24	72	f	s				crl,ar	25,33.3,16.6,16.6,0,16.6,16.6,16.6	
25	75	f	p				dm,ar	0,33.3,83.3,83.3,83.3,16.6,83.3,16.6	
26	67	f	s				dm	100,100,33.3,83.3,66.6,83.3,83.3,83.3	
27	71	f	p				dm,ar,git	75,33.3,100,83.3,83.3,0,83.3,33.3	
28	72	f	p	y	mui	ml	dm,crl,ar	0,33.3,66.6,66.6,66.6,66.6,66.6,33.3	y
29	80	m	s				crl,ar	6	
30	72	m	p				dm,hd,git	5	
31	75	m	p				crl,ar,bph	2	
32	66	m	s				dm,hd,bph	6	
33	78	m	p				crl,ar,bph,cva	5	
34	81	f	p				dm	75,66.6,83.3,83.3,100,16.6,83.3,66.6	
35	65	f	s				crl,ar,hys	25,33.3,16.6,16.6,0,16.6,16.6,16.6	
36	75	f	p				dm,ar	0,33.3,83.3,83.3,83.3,16.6,83.3,16.6	
37	71	f	p	y	sui	ml	dm,cva,hd,ar,hys	75,100,0,66.6,0,16.6,16.6,16.6	y
38	78	f	p				dm,pd	100,100,33.3,83.3,66.6,83.3,83.3,83.3	
39	81	f	s				dm,ar,git	75,33.3,100,83.3,83.3,0,83.3,33.3	
40	68	m	p				crl,ar	3	
41	78	m	s				dm,hd,git	6	
42	82	m	p				crl,ar,bph	5	
43	75	m	p	y	uui	s	dm,cva,hd,ar	6	
44	75	m	p				dm,hd,bph	6	
45	67	m	p				crl,ar,bph	3	
46	78	f	s				dm	75,66.6,83.3,83.3,100,16.6,83.3,66.6	
47	68	f	p				crl,ar	25,33.3,16.6,16.6,0,16.6,16.6,16.6	
48	80	f	p				dm,ar	0,33.3,83.3,83.3,83.3,16.6,83.3,16.6	
49	76	m	s	y	mui	mo	dm,crl,hd,ar,bph	4	y
50	77	f	p				dm,hys	100,100,33.3,83.3,66.6,83.3,83.3,83.3	
51	69	f	s				dm,ar,git	75,33.3,100,83.3,83.3,0,83.3,33.3	
52	76	m	p				crl,ar	6	
53	81	m	p				dm,hd,git	4	
54	75	m	s				crl,ar,bph	5	
55	76	m	p				dm,hd,bph	4	

56	83	m	p				crl,ar,bph	5	
57	78	f	p	y	sui	ml	dm,cva,hd,cys,hys	25,0,83.3,83.3,83.3,83.3,0,66.6	
58	68	f	p				dm	75,66.6,83.3,83.3,100,16.6,83.3,66.6	
59	69	f	s				crl,ar	25,33.3,16.6,16.6,0,16.6,16.6,16.6	
60	80	f	p	y	uui	ml	dm,cva,ar,hys	50,0,66.6,66.6,66.6,66.6,66.6,33.3	y
61	79	f	p				dm,ar	0,33.3,83.3,83.3,83.3,16.6,83.3,16.6	
62	78	f	p				dm	100,100,33.3,83.3,66.6,83.3,83.3,83.3	
63	76	f	s				dm,ar,git	75,33.3,100,83.3,83.3,0,83.3,33.3	
64	80	m	p				crl,ar	5	
65	81	m	s				dm,hd,git	6	
66	77	f	s	y	mui	ml	dm,crl,hd,pd,git,up	25,66.6,33.3,33.3,33.3,33.3,16.6,83.3	y
67	79	m	p				crl,ar,bph	5	
68	76	m	p				dm,hd,bph	6	
69	79	m	s				crl,ar,bph	5	
70	79	f	p				dm,cys	75,66.6,83.3,83.3,100,16.6,83.3,66.6	
71	80	f	s				crl,ar	25,33.3,16.6,16.6,0,16.6,16.6,16.6	
72	71	f	p				dm,ar	0,33.3,83.3,83.3,83.3,16.6,83.3,16.6	
73	79	f	p				dm	100,100,33.3,83.3,66.6,83.3,83.3,83.3	
74	79	f	p	y	sui	s	dm,cva,ar,cys,hys	75,33.3,66.6,66.6,66.6,83.3,33.3,16.6	
75	73	f	p				dm,ar,git	75,33.3,100,83.3,83.3,0,83.3,33.3	
76	80	m	p				crl,ar	6	
77	82	m	s				dm,hd,git	5	
78	73	m	p				crl,ar,bph	6	
79	81	m	p				dm,hd,bph	5	
80	82	f	p	y	uui	s	crl,hd,ar,cys,up	25,100,100,100,100,83.3,83.3,0	y
81	73	m	p				crl,ar,bph	6	
82	77	f	p				dm	75,66.6,83.3,83.3,100,16.6,83.3,66.6	
83	81	f	s				crl,ar	25,33.3,16.6,16.6,0,16.6,16.6,16.6	
84	76	f	p				dm,ar	0,33.3,83.3,83.3,83.3,16.6,83.3,16.6	
85	73	f	p				dm,cys	100,100,33.3,83.3,66.6,83.3,83.3,83.3	
86	80	m	p	y	uui	s	crl,hd,ar,pd,git	4	y
87	77	f	p				dm,ar,git	75,33.3,100,83.3,83.3,0,83.3,33.3	
88	79	m	p				crl,ar	5	
89	76	m	p				dm,hd,git	6	
90	71	m	p				crl,ar,bph	5	
91	73	m	s				dm,hd,bph	6	
92	73	m	p				crl,ar,bph	5	
93	77	f	p				dm	75,66.6,83.3,83.3,100,16.6,83.3,66.6	
94	73	f	s				crl,ar	25,33.3,16.6,16.6,0,16.6,16.6,16.6	
95	82	m	s	y	mui	s	crl,hd,ar,bph	3	
96	73	f	p				dm,ar	0,33.3,83.3,83.3,83.3,16.6,83.3,16.6	
97	77	f	s				dm,hys	100,100,33.3,83.3,66.6,83.3,83.3,83.3	
98	74	f	p				dm,ar,git	75,33.3,100,83.3,83.3,0,83.3,33.3	
99	70	m	p				crl,ar	6	
100	70	m	s				dm,hd,git	5	
101	77	m	p				crl,ar,bph	6	
102	84	m	s	y	uui	ml	dm,crl,ar,bph	2	y
103	73	m	p				dm,hd,bph	5	
104	71	m	p				crl,ar,bph	6	
105	74	f	p				dm	75,66.6,83.3,83.3,100,16.6,83.3,66.6	
106	70	f	p				crl,ar	25,33.3,16.6,16.6,0,16.6,16.6,16.6	
107	74	f	p				dm,ar	0,33.3,83.3,83.3,83.3,16.6,83.3,16.6	
108	74	f	p				dm,up,cys	100,100,33.3,83.3,66.6,83.3,83.3,83.3	
109	70	f	p				dm,ar,git	75,33.3,100,83.3,83.3,0,83.3,33.3	
110	74	m	s				crl,ar	5	
111	74	m	p				dm,hd,git	6	

112	82	f	p	y	sui	mo	dm,hd,ar,cys,up	50,0,0,0,0,16.6,16.6,66.6	y
113	70	m	p				crl,ar,bph	5	
114	74	m	p				dm,hd,bph	6	
115	71	m	p				crl,ar,bph	5	
116	70	f	p				dm,up,cys	75,66.6,83.3,83.3,100,16.6,83.3,66.6	
117	70	f	p				crl,ar	25,33.3,16.6,16.6,0,16.6,16.6,16.6	
118	80	f	s	y	uui	s	crl,hd,ar,cys,hys	75,66.6,66.6,66.6,66.6,83.3,33.3,16.6	y
119	71	f	p				dm,ar	0,33.3,83.3,83.3,83.3,16.6,83.3,16.6	
120	74	f	p				dm	100,100,33.3,83.3,66.6,83.3,83.3,83.3	
121	70	f	p				dm,ar,git	75,33.3,100,83.3,83.3,0,83.3,33.3	
122	71	m	p				crl,ar	6	
123	83	f	s	y	mui	mo	crl,hd,ar,hys	100,33.3,0,0,016.6,16.6,83.3	y
124	74	m	p				dm,hd,git	5	
125	71	m	p				crl,ar,bph	6	
126	65	f	s				dm,ar,git	75,66.6,83.3,83.3,100,16.6,83.3,66.6	
127	72	m	p				crl,ar	5	
128	65	m	p	y	uui	ml	dm,crl,cva,cys	4	y
129	78	m	p				dm,hd,git,cva	6	
130	66	m	s				crl,ar,bph	5	
131	81	m	p				dm,hd,bph	0	
132	72	m	p				crl,ar,bph	6	
133	68	f	p	y	sui	s	dm,hd,ar	25,0,66.6,66.6,66.6,83.3,0,66.36	y
134	66	f	p				dm	25,33.3,16.6,16.6,0,16.6,16.6,16.6	
135	80	f	s				crl,ar	0,33.3,83.3,83.3,83.3,16.6,83.3,16.6	
136	72	f	p				dm,ar	100,100,33.3,83.3,66.6,83.3,83.3,83.3	
137	67	m	s	y	sui	ml	dm,cva,hd,ar,bph	5	
138	75	f	p				dm	100,100,33.3,83.3,66.6,83.3,83.3,83.3	
139	68	f	s				dm,ar,git	75,33.3,100,83.3,83.3,0,83.3,33.3	
140	72	m	p				crl,ar,cva	5	
141	72	m	p	y	mui	ml	dm,crl,hd,pd,git	5	y
142	72	m	p				dm,hd,git	5	
143	72	m	s				crl,ar,bph	1	
144	70	m	p	y	uui	mo	dm,crl,hd,ar,bph	5	y
145	69	m	p				dm,hd,bph	6	
146	81	m	s				crl,ar,bph,cva	5	
147	80	f	p				dm	75,66.6,83.3,83.3,100,16.6,83.3,66.6	
148	74	f	s	y	uui	ml	dm,hd,ar,cys	50,66.6,0,0,0,16.6,16.6,83	
149	72	f	s				crl,ar	25,33.3,16.6,16.6,0,16.6,16.6,16.6	
150	75	f	p				dm,ar	0,33.3,83.3,83.3,83.3,16.6,83.3,16.6	
151	67	f	s				dm	100,100,33.3,83.3,66.6,83.3,83.3,83.3	
152	71	f	p				dm,ar,git	75,33.3,100,83.3,83.3,0,83.3,33.3	
153	72	f	p	y	mui	ml	dm,crl,ar	0,33.3,66.6,66.6,66.6,66.6,66.6,33.3	y
154	80	m	s				crl,ar	6	
155	72	m	p				dm,hd,git	5	
156	75	m	p				crl,ar,bph	2	
157	66	m	s				dm,hd,bph	6	
158	78	m	p				crl,ar,bph,cva	5	
159	81	f	p				dm	75,66.6,83.3,83.3,100,16.6,83.3,66.6	
160	65	f	s				crl,ar,hys	25,33.3,16.6,16.6,0,16.6,16.6,16.6	
161	75	f	p				dm,ar	0,33.3,83.3,83.3,83.3,16.6,83.3,16.6	
162	71	f	p	y	sui	ml	dm,cva,hd,ar,hys	75,100,0,66.6,0,16.6,16.6,16.6	y
163	78	f	p				dm,pd	100,100,33.3,83.3,66.6,83.3,83.3,83.3	
164	81	f	s				dm,ar,git	75,33.3,100,83.3,83.3,0,83.3,33.3	
165	68	m	p				crl,ar	3	
166	78	m	s				dm,hd,git	6	
167	82	m	p				crl,ar,bph	5	
168	75	m	p	y	uui	s	dm,cva,hd,ar	6	
169	75	m	p				dm,hd,bph	6	

170	67	m	p				crl,ar,bph	3	
171	78	f	s				dm	75,66.6,83.3,83.3,100,16.6,83.3,66.6	
172	68	f	p				crl,ar	25,33.3,16.6,16.6,0,16.6,16.6,16.6	
173	80	f	p				dm,ar	0,33.3,83.3,83.3,83.3,16.6,83.3,16.6	
174	76	m	s	y	mui	mo	dm,crl,hd,ar,bph	4	y
175	77	f	p				dm,hys	100,100,33.3,83.3,66.6,83.3,83.3,83.3	
176	69	f	s				dm,ar,git	75,33.3,100,83.3,83.3,0,83.3,33.3	
177	76	m	p				crl,ar	6	
178	81	m	p				dm,hd,git	4	
179	75	m	s				crl,ar,bph	5	
180	76	m	p				dm,hd,bph	4	
181	83	m	p				crl,ar,bph	5	
182	78	f	p	y	sui	ml	dm,cva,hd,cys,hys	25,0,83.3,83.3,83.3,83.3,0,66.6	
183	68	f	p				dm	75,66.6,83.3,83.3,100,16.6,83.3,66.6	
184	69	f	s				crl,ar	25,33.3,16.6,16.6,0,16.6,16.6,16.6	
185	80	f	p	y	uui	ml	dm,cva,ar,hys	50,0,66.6,66.6,66.6,66.6,66.6,33.3	y
186	79	f	p				dm,ar	0,33.3,83.3,83.3,83.3,16.6,83.3,16.6	
187	78	f	p				dm	100,100,33.3,83.3,66.6,83.3,83.3,83.3	
188	76	f	s				dm,ar,git	75,33.3,100,83.3,83.3,0,83.3,33.3	
189	80	m	p				crl,ar	5	
190	81	m	s				dm,hd,git	6	
191	77	f	s	y	mui	ml	dm,crl,hd,pd,git,up	25,66.6,33.3,33.3,33.3,33.3,16.6,83.3	y
192	79	m	p				crl,ar,bph	5	
193	76	m	p				dm,hd,bph	6	
194	79	m	s				crl,ar,bph	5	
195	79	f	p				dm,cys	75,66.6,83.3,83.3,100,16.6,83.3,66.6	
196	80	f	s				crl,ar	25,33.3,16.6,16.6,0,16.6,16.6,16.6	
197	71	f	p				dm,ar	0,33.3,83.3,83.3,83.3,16.6,83.3,16.6	
198	79	f	p				dm	100,100,33.3,83.3,66.6,83.3,83.3,83.3	
199	79	f	p	y	sui	s	dm,cva,ar,cys,hys	75,33.3,66.6,66.6,66.6,83.3,33.3,16.6	
200	73	f	p				dm,ar,git	75,33.3,100,83.3,83.3,0,83.3,33.3	
201	80	m	p				crl,ar	6	
202	82	m	s				dm,hd,git	5	
203	73	m	p				crl,ar,bph	6	
204	81	m	p				dm,hd,bph	5	
205	82	f	p	y	uui	s	crl,hd,ar,cys,up	25,100,100,100,100,83.3,83.3,0	y
206	73	m	p				crl,ar,bph	6	
207	77	f	p				dm	75,66.6,83.3,83.3,100,16.6,83.3,66.6	
208	81	f	s				crl,ar	25,33.3,16.6,16.6,0,16.6,16.6,16.6	
209	76	f	p				dm,ar	0,33.3,83.3,83.3,83.3,16.6,83.3,16.6	
210	73	f	p				dm,cys	100,100,33.3,83.3,66.6,83.3,83.3,83.3	
211	80	m	p	y	uui	s	crl,hd,ar,pd,git	4	y
212	77	f	p				dm,ar,git	75,33.3,100,83.3,83.3,0,83.3,33.3	
213	79	m	p				crl,ar	5	
214	76	m	p				dm,hd,git	6	
215	71	m	p				crl,ar,bph	5	
216	73	m	s				dm,hd,bph	6	
217	73	m	p				crl,ar,bph	5	
218	77	f	p				dm	75,66.6,83.3,83.3,100,16.6,83.3,66.6	
219	73	f	s				crl,ar	25,33.3,16.6,16.6,0,16.6,16.6,16.6	
220	82	m	s	y	mui	s	crl,hd,ar,bph	3	
221	73	f	p				dm,ar	0,33.3,83.3,83.3,83.3,16.6,83.3,16.6	
222	77	f	s				dm,hys	100,100,33.3,83.3,66.6,83.3,83.3,83.3	
223	74	f	p				dm,ar,git	75,33.3,100,83.3,83.3,0,83.3,33.3	
224	70	m	p				crl,ar	6	
225	70	m	s				dm,hd,git	5	

226	77	m	p				crl,ar,bph	6	
227	84	m	s	y	uui	ml	dm,crl,ar,bph	2	y
228	73	m	p				dm,hd,bph	5	
229	71	m	p				crl,ar,bph	6	
230	74	f	p				dm	75,66.6,83.3,83.3,100,16.6,83.3,66.6	
231	70	f	p				crl,ar	25,33.3,16.6,16.6,0,16.6,16.6,16.6	
232	74	f	p				dm,ar	0,33.3,83.3,83.3,83.3,16.6,83.3,16.6	
233	74	f	p				dm,up,cys	100,100,33.3,83.3,66.6,83.3,83.3,83.3	
234	70	f	p				dm,ar,git	75,33.3,100,83.3,83.3,0,83.3,33.3	
235	74	m	s				crl,ar	5	
236	74	m	p				dm,hd,git	6	
237	82	f	p	y	sui	mo	dm,hd,ar,cys,up	50,0,0,0,0,16.6,16.6,66.6	y
238	70	m	p				crl,ar,bph	5	
239	74	m	p				dm,hd,bph	6	
240	71	m	p				crl,ar,bph	5	
241	70	f	p				dm,up,cys	75,66.6,83.3,83.3,100,16.6,83.3,66.6	
242	70	f	p				crl,ar	25,33.3,16.6,16.6,0,16.6,16.6,16.6	
243	80	f	s	y	uui	s	crl,hd,ar,cys,hys	75,66.6,66.6,66.6,66.6,83.3,33.3,16.6	y
244	71	f	p				dm,ar	0,33.3,83.3,83.3,83.3,16.6,83.3,16.6	
245	74	f	p				dm	100,100,33.3,83.3,66.6,83.3,83.3,83.3	
246	70	f	p				dm,ar,git	75,33.3,100,83.3,83.3,0,83.3,33.3	
247	71	m	p				crl,ar	6	
248	83	f	s	y	mui	mo	crl,hd,ar,hys	100,33.3,0,0,016.6,16.6,83.3	y
249	74	m	p				dm,hd,git	5	
250	71	m	p				crl,ar,bph	6	
251	65	f	s				dm,ar,git	75,66.6,83.3,83.3,100,16.6,83.3,66.6	
252	72	m	p				crl,ar	5	
253	65	m	p	y	uui	ml	dm,crl,cva,cys	4	y
254	78	m	p				dm,hd,git,cva	6	
255	66	m	s				crl,ar,bph	5	
256	81	m	p				dm,hd,bph	0	
257	72	m	p				crl,ar,bph	6	
258	68	f	p	y	sui	s	dm,hd,ar	25,0,66.6,66.6,66.6,83.3,0,66.36	y
259	66	f	p				dm	25,33.3,16.6,16.6,0,16.6,16.6,16.6	
260	80	f	s				crl,ar	0,33.3,83.3,83.3,83.3,16.6,83.3,16.6	
261	72	f	p				dm,ar	100,100,33.3,83.3,66.6,83.3,83.3,83.3	
262	67	m	s	y	sui	ml	dm,cva,hd,ar,bph	5	
263	75	f	p				dm	100,100,33.3,83.3,66.6,83.3,83.3,83.3	
264	68	f	s				dm,ar,git	75,33.3,100,83.3,83.3,0,83.3,33.3	
265	72	m	p				crl,ar,cva	5	
266	72	m	p	y	mui	ml	dm,crl,hd,pd,git	5	y
267	72	m	p				dm,hd,git	5	
268	72	m	s				crl,ar,bph	1	
269	70	m	p	y	uui	mo	dm,crl,hd,ar,bph	5	y
270	69	m	p				dm,hd,bph	6	
271	81	m	s				crl,ar,bph,cva	5	
272	80	f	p				dm	75,66.6,83.3,83.3,100,16.6,83.3,66.6	
273	74	f	s	y	uui	ml	dm,hd,ar,cys	50,66.6,0,0,0,16.6,16.6,83	
274	72	f	s				crl,ar	25,33.3,16.6,16.6,0,16.6,16.6,16.6	
275	75	f	p				dm,ar	0,33.3,83.3,83.3,83.3,16.6,83.3,16.6	
276	67	f	s				dm	100,100,33.3,83.3,66.6,83.3,83.3,83.3	
277	71	f	p				dm,ar,git	75,33.3,100,83.3,83.3,0,83.3,33.3	
278	72	f	p	y	mui	ml	dm,crl,ar	0,33.3,66.6,66.6,66.6,66.6,66.6,33.3	y
279	80	m	s				crl,ar	6	
280	72	m	p				dm,hd,git	5	
281	75	m	p				crl,ar,bph	2	
282	66	m	s				dm,hd,bph	6	

283	78	m	p				crl,ar,bph,cva	5	
284	81	f	p				dm	75,66.6,83.3,83.3,100,16.6,83.3,66.6	
285	65	f	s				crl,ar,hys	25,33.3,16.6,16.6,0,16.6,16.6,16.6	
286	75	f	p				dm,ar	0,33.3,83.3,83.3,83.3,16.6,83.3,16.6	
287	71	f	p	y	sui	ml	dm,cva,hd,ar,hys	75,100,0,66.6,0,16.6,16.6,16.6	y
288	78	f	p				dm,pd	100,100,33.3,83.3,66.6,83.3,83.3,83.3	
289	81	f	s				dm,ar,git	75,33.3,100,83.3,83.3,0,83.3,33.3	
290	68	m	p				crl,ar	3	
291	78	m	s				dm,hd,git	6	
292	82	m	p				crl,ar,bph	5	
293	75	m	p	y	uui	s	dm,cva,hd,ar	6	
294	75	m	p				dm,hd,bph	6	
295	67	m	p				crl,ar,bph	3	
296	78	f	s				dm	75,66.6,83.3,83.3,100,16.6,83.3,66.6	
297	68	f	p				crl,ar	25,33.3,16.6,16.6,0,16.6,16.6,16.6	
298	80	f	p				dm,ar	0,33.3,83.3,83.3,83.3,16.6,83.3,16.6	
299	76	m	s	y	mui	mo	dm,crl,hd,ar,bph	4	y
300	77	f	p				dm,hys	100,100,33.3,83.3,66.6,83.3,83.3,83.3	
301	69	f	s				dm,ar,git	75,33.3,100,83.3,83.3,0,83.3,33.3	
302	76	m	p				crl,ar	6	
303	81	m	p				dm,hd,git	4	
304	75	m	s				crl,ar,bph	5	
305	76	m	p				dm,hd,bph	4	
306	83	m	p				crl,ar,bph	5	
307	78	f	p	y	sui	ml	dm,cva,hd,cys,hys	25,0,83.3,83.3,83.3,83.3,0,66.6	
308	68	f	p				dm	75,66.6,83.3,83.3,100,16.6,83.3,66.6	
309	69	f	s				crl,ar	25,33.3,16.6,16.6,0,16.6,16.6,16.6	
310	80	f	p	y	uui	ml	dm,cva,ar,hys	50,0,66.6,66.6,66.6,66.6,66.6,33.3	y
311	79	f	p				dm,ar	0,33.3,83.3,83.3,83.3,16.6,83.3,16.6	
312	78	f	p				dm	100,100,33.3,83.3,66.6,83.3,83.3,83.3	
313	76	f	s				dm,ar,git	75,33.3,100,83.3,83.3,0,83.3,33.3	
314	80	m	p				crl,ar	5	
315	81	m	s				dm,hd,git	6	
316	77	f	s	y	mui	ml	dm,crl,hd,pd,git,up	25,66.6,33.3,33.3,33.3,33.3,16.6,83.3	y
317	79	m	p				crl,ar,bph	5	
318	76	m	p				dm,hd,bph	6	
319	79	m	s				crl,ar,bph	5	
320	79	f	p				dm,cys	75,66.6,83.3,83.3,100,16.6,83.3,66.6	
321	80	f	s				crl,ar	25,33.3,16.6,16.6,0,16.6,16.6,16.6	
322	71	f	p				dm,ar	0,33.3,83.3,83.3,83.3,16.6,83.3,16.6	
323	79	f	p				dm	100,100,33.3,83.3,66.6,83.3,83.3,83.3	
324	79	f	p	y	sui	s	dm,cva,ar,cys,hys	75,33.3,66.6,66.6,66.6,83.3,33.3,16.6	
325	73	f	p				dm,ar,git	75,33.3,100,83.3,83.3,0,83.3,33.3	
326	80	m	p				crl,ar	6	
327	82	m	s				dm,hd,git	5	
328	73	m	p				crl,ar,bph	6	
329	81	m	p				dm,hd,bph	5	
330	82	f	p	y	uui	s	crl,hd,ar,cys,up	25,100,100,100,100,83.3,83.3,0	y
331	73	m	p				crl,ar,bph	6	
332	77	f	p				dm	75,66.6,83.3,83.3,100,16.6,83.3,66.6	
333	81	f	s				crl,ar	25,33.3,16.6,16.6,0,16.6,16.6,16.6	
334	76	f	p				dm,ar	0,33.3,83.3,83.3,83.3,16.6,83.3,16.6	
335	73	f	p				dm,cys	100,100,33.3,83.3,66.6,83.3,83.3,83.3	
336	80	m	p	y	uui	s	crl,hd,ar,pd,git	4	y
337	77	f	p				dm,ar,git	75,33.3,100,83.3,83.3,0,83.3,33.3	

338	79	m	p				crl,ar	5	
339	76	m	p				dm,hd,git	6	
340	71	m	p				crl,ar,bph	5	
341	73	m	s				dm,hd,bph	6	
342	73	m	p				crl,ar,bph	5	
343	77	f	p				dm	75,66.6,83.3,83.3,100,16.6,83.3,66.6	
344	73	f	s				crl,ar	25,33.3,16.6,16.6,0,16.6,16.6,16.6	
345	82	m	s	y	mui	s	crl,hd,ar,bph	3	
346	73	f	p				dm,ar	0,33.3,83.3,83.3,83.3,16.6,83.3,16.6	
347	77	f	s				dm,hys	100,100,33.3,83.3,66.6,83.3,83.3,83.3	
348	74	f	p				dm,ar,git	75,33.3,100,83.3,83.3,0,83.3,33.3	
349	70	m	p				crl,ar	6	
350	70	m	s				dm,hd,git	5	
351	77	m	p				crl,ar,bph	6	
352	84	m	s	y	uui	ml	dm,crl,ar,bph	2	y
353	73	m	p				dm,hd,bph	5	
354	71	m	p				crl,ar,bph	6	
355	74	f	p				dm	75,66.6,83.3,83.3,100,16.6,83.3,66.6	
356	70	f	p				crl,ar	25,33.3,16.6,16.6,0,16.6,16.6,16.6	
357	74	f	p				dm,ar	0,33.3,83.3,83.3,83.3,16.6,83.3,16.6	
358	74	f	p				dm,up,cys	100,100,33.3,83.3,66.6,83.3,83.3,83.3	
359	70	f	p				dm,ar,git	75,33.3,100,83.3,83.3,0,83.3,33.3	
360	74	m	s				crl,ar	5	
361	74	m	p				dm,hd,git	6	
362	82	f	p	y	sui	mo	dm,hd,ar,cys,up	50,0,0,0,0,16.6,16.6,66.6	y
363	70	m	p				crl,ar,bph	5	
364	74	m	p				dm,hd,bph	6	
365	71	m	p				crl,ar,bph	5	
366	70	f	p				dm,up,cys	75,66.6,83.3,83.3,100,16.6,83.3,66.6	
367	70	f	p				crl,ar	25,33.3,16.6,16.6,0,16.6,16.6,16.6	
368	80	f	s	y	uui	s	crl,hd,ar,cys,hys	75,66.6,66.6,66.6,66.6,83.3,33.3,16.6	y
369	71	f	p				dm,ar	0,33.3,83.3,83.3,83.3,16.6,83.3,16.6	
370	74	f	p				dm	100,100,33.3,83.3,66.6,83.3,83.3,83.3	
371	70	f	p				dm,ar,git	75,33.3,100,83.3,83.3,0,83.3,33.3	
372	71	m	p				crl,ar	6	
373	83	f	s	y	mui	mo	crl,hd,ar,hys	100,33.3,0,0,016.6,16.6,83.3	y
374	74	m	p				dm,hd,git	5	
375	71	m	p				crl,ar,bph	6	
376	65	f	s				dm,ar,git	75,66.6,83.3,83.3,100,16.6,83.3,66.6	
377	72	m	p				crl,ar	5	
378	65	m	p	y	uui	ml	dm,crl,cva,cys	4	y
379	78	m	p				dm,hd,git,cva	6	
380	66	m	s				crl,ar,bph	5	
381	81	m	p				dm,hd,bph	0	
382	72	m	p				crl,ar,bph	6	
383	68	f	p	y	sui	s	dm,hd,ar	25,0,66.6,66.6,66.6,83.3,0,66.36	y
384	66	f	p				dm	25,33.3,16.6,16.6,0,16.6,16.6,16.6	
385	80	f	s				crl,ar	0,33.3,83.3,83.3,83.3,16.6,83.3,16.6	
386	72	f	p				dm,ar	100,100,33.3,83.3,66.6,83.3,83.3,83.3	
387	67	m	s	y	sui	ml	dm,cva,hd,ar,bph	5	
388	75	f	p				dm	100,100,33.3,83.3,66.6,83.3,83.3,83.3	
389	68	f	s				dm,ar,git	75,33.3,100,83.3,83.3,0,83.3,33.3	
390	72	m	p				crl,ar,cva	5	
391	72	m	p	y	mui	ml	dm,crl,hd,pd,git	5	y
392	72	m	p				dm,hd,git	5	
393	72	m	s				crl,ar,bph	1	
394	70	m	p	y	uui	mo	dm,crl,hd,ar,bph	5	y
395	69	m	p				dm,hd,bph	6	

396	81	m	s				crl,ar,bph,cva	5	
397	80	f	p				dm	75,66.6,83.3,83.3,100,16.6,83.3,66.6	
398	74	f	s	y	uui	ml	dm,hd,ar,cys	50,66.6,0,0,0,16.6,16.6,83	
399	72	f	s				crl,ar	25,33.3,16.6,16.6,0,16.6,16.6,16.6	
400	75	f	p				dm,ar	0,33.3,83.3,83.3,83.3,16.6,83.3,16.6	
401	67	f	s				dm	100,100,33.3,83.3,66.6,83.3,83.3,83.3	
402	71	f	p				dm,ar,git	75,33.3,100,83.3,83.3,0,83.3,33.3	
403	72	f	p	y	mui	ml	dm,crl,ar	0,33.3,66.6,66.6,66.6,66.6,66.6,33.3	y
404	80	m	s				crl,ar	6	
405	72	m	p				dm,hd,git	5	
406	75	m	p				crl,ar,bph	2	
407	66	m	s				dm,hd,bph	6	
408	78	m	p				crl,ar,bph,cva	5	
409	81	f	p				dm	75,66.6,83.3,83.3,100,16.6,83.3,66.6	
410	65	f	s				crl,ar,hys	25,33.3,16.6,16.6,0,16.6,16.6,16.6	
411	75	f	p				dm,ar	0,33.3,83.3,83.3,83.3,16.6,83.3,16.6	
412	71	f	p	y	sui	ml	dm,cva,hd,ar,hys	75,100,0,66.6,0,16.6,16.6,16.6	y
413	78	f	p				dm,pd	100,100,33.3,83.3,66.6,83.3,83.3,83.3	
414	81	f	s				dm,ar,git	75,33.3,100,83.3,83.3,0,83.3,33.3	
415	68	m	p				crl,ar	3	
416	78	m	s				dm,hd,git	6	
417	82	m	p				crl,ar,bph	5	
418	75	m	p	y	uui	s	dm,cva,hd,ar	6	
419	75	m	p				dm,hd,bph	6	
420	67	m	p				crl,ar,bph	3	
421	78	f	s				dm	75,66.6,83.3,83.3,100,16.6,83.3,66.6	
422	68	f	p				crl,ar	25,33.3,16.6,16.6,0,16.6,16.6,16.6	
423	80	f	p				dm,ar	0,33.3,83.3,83.3,83.3,16.6,83.3,16.6	
424	76	m	s	y	mui	mo	dm,crl,hd,ar,bph	4	y
425	77	f	p				dm,hys	100,100,33.3,83.3,66.6,83.3,83.3,83.3	
426	69	f	s				dm,ar,git	75,33.3,100,83.3,83.3,0,83.3,33.3	
427	76	m	p				crl,ar	6	
428	81	m	p				dm,hd,git	4	
429	75	m	s				crl,ar,bph	5	
430	76	m	p				dm,hd,bph	4	
431	83	m	p				crl,ar,bph	5	
432	78	f	p	y	sui	ml	dm,cva,hd,cys,hys	25,0,83.3,83.3,83.3,83.3,0,66.6	
433	68	f	p				dm	75,66.6,83.3,83.3,100,16.6,83.3,66.6	
434	69	f	s				crl,ar	25,33.3,16.6,16.6,0,16.6,16.6,16.6	
435	80	f	p	y	uui	ml	dm,cva,ar,hys	50,0,66.6,66.6,66.6,66.6,66.6,33.3	y
436	79	f	p				dm,ar	0,33.3,83.3,83.3,83.3,16.6,83.3,16.6	
437	78	f	p				dm	100,100,33.3,83.3,66.6,83.3,83.3,83.3	
438	76	f	s				dm,ar,git	75,33.3,100,83.3,83.3,0,83.3,33.3	
439	80	m	p				crl,ar	5	
440	81	m	s				dm,hd,git	6	
441	77	f	s	y	mui	ml	dm,crl,hd,pd,git,up	25,66.6,33.3,33.3,33.3,33.3,16.6,83.3	y
442	79	m	p				crl,ar,bph	5	
443	76	m	p				dm,hd,bph	6	
444	79	m	s				crl,ar,bph	5	
445	79	f	p				dm,cys	75,66.6,83.3,83.3,100,16.6,83.3,66.6	
446	80	f	s				crl,ar	25,33.3,16.6,16.6,0,16.6,16.6,16.6	
447	71	f	p				dm,ar	0,33.3,83.3,83.3,83.3,16.6,83.3,16.6	
448	79	f	p				dm	100,100,33.3,83.3,66.6,83.3,83.3,83.3	
449	79	f	p	y	sui	s	dm,cva,ar,cys,hys	75,33.3,66.6,66.6,66.6,83.3,33.3,16.6	
450	73	f	p				dm,ar,git	75,33.3,100,83.3,83.3,0,83.3,33.3	
451	80	m	p				crl,ar	6	

452	82	m	s				dm,hd,git	5	
453	73	m	p				crl,ar,bph	6	
454	81	m	p				dm,hd,bph	5	
455	82	f	p	y	uui	s	crl,hd,ar,cys,up	25,100,100,100,100,83.3,83.3,0	y
456	73	m	p				crl,ar,bph	6	
457	77	f	p				dm	75,66.6,83.3,83.3,100,16.6,83.3,66.6	
458	81	f	s				crl,ar	25,33.3,16.6,16.6,0,16.6,16.6,16.6	
459	76	f	p				dm,ar	0,33.3,83.3,83.3,83.3,16.6,83.3,16.6	
460	73	f	p				dm,cys	100,100,33.3,83.3,66.6,83.3,83.3,83.3	
461	80	m	p	y	uui	s	crl,hd,ar,pd,git	4	y
462	77	f	p				dm,ar,git	75,33.3,100,83.3,83.3,0,83.3,33.3	
463	79	m	p				crl,ar	5	
464	76	m	p				dm,hd,git	6	
465	71	m	p				crl,ar,bph	5	
466	73	m	s				dm,hd,bph	6	
467	73	m	p				crl,ar,bph	5	
468	77	f	p				dm	75,66.6,83.3,83.3,100,16.6,83.3,66.6	
469	73	f	s				crl,ar	25,33.3,16.6,16.6,0,16.6,16.6,16.6	
470	82	m	s	y	mui	s	crl,hd,ar,bph	3	
471	73	f	p				dm,ar	0,33.3,83.3,83.3,83.3,16.6,83.3,16.6	
472	77	f	s				dm,hys	100,100,33.3,83.3,66.6,83.3,83.3,83.3	
473	74	f	p				dm,ar,git	75,33.3,100,83.3,83.3,0,83.3,33.3	
474	70	m	p				crl,ar	6	
475	70	m	s				dm,hd,git	5	
476	77	m	p				crl,ar,bph	6	
477	84	m	s	y	uui	ml	dm,crl,ar,bph	2	y
478	73	m	p				dm,hd,bph	5	
479	71	m	p				crl,ar,bph	6	
480	74	f	p				dm	75,66.6,83.3,83.3,100,16.6,83.3,66.6	
481	70	f	p				crl,ar	25,33.3,16.6,16.6,0,16.6,16.6,16.6	
482	74	f	p				dm,ar	0,33.3,83.3,83.3,83.3,16.6,83.3,16.6	
483	74	f	p				dm,up,cys	100,100,33.3,83.3,66.6,83.3,83.3,83.3	
484	70	f	p				dm,ar,git	75,33.3,100,83.3,83.3,0,83.3,33.3	
485	74	m	s				crl,ar	5	
486	74	m	p				dm,hd,git	6	
487	82	f	p	y	sui	mo	dm,hd,ar,cys,up	50,0,0,0,0,16.6,16.6,66.6	y
488	70	m	p				crl,ar,bph	5	
489	74	m	p				dm,hd,bph	6	
490	71	m	p				crl,ar,bph	5	
491	70	f	p				dm,up,cys	75,66.6,83.3,83.3,100,16.6,83.3,66.6	
492	70	f	p				crl,ar	25,33.3,16.6,16.6,0,16.6,16.6,16.6	
493	80	f	s	y	uui	s	crl,hd,ar,cys,hys	75,66.6,66.6,66.6,66.6,83.3,33.3,16.6	y
494	71	f	p				dm,ar	0,33.3,83.3,83.3,83.3,16.6,83.3,16.6	
495	74	f	p				dm	100,100,33.3,83.3,66.6,83.3,83.3,83.3	
496	70	f	p				dm,ar,git	75,33.3,100,83.3,83.3,0,83.3,33.3	
497	71	m	p				crl,ar	6	
498	83	f	s	y	mui	mo	crl,hd,ar,hys	100,33.3,0,0,016.6,16.6,83.3	y
499	74	m	p				dm,hd,git	5	
500	71	m	p				crl,ar,bph	6	